



# TOXTALK

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## Abraham W. Freireich, MD 1906-1985

by Leo A. Dal Cortivo, PhD

Forensic toxicology lost one of its early pioneers and stalwart champions with the death of Abraham Walter Freireich on 26 January 1985.

Abraham Freireich was born on 27 July 1906 in New York city, where he received his primary and secondary education. He went on to earn the baccalaureate degree from CCNY and later the MD degree from NYU-Bellevue Hospital Medical College. He then completed an internship at Bellevue from 1933 to 1935.

While at NYU-Bellevue, Dr. Freireich became involved in toxicology through association with Dr. Alexander O. Gettler, then Toxicologist to the Office of the Chief Medical Examiner of the City of New York. This relationship developed into one of mutual professional respect and close personal friendship which lasted until Dr. Gettler's death. Together the two published several early reports on ethanol, including studies on the nature of tolerance to the drug and the use of cerebrospinal fluid as a specimen for estimating degree of impairment. Together, also, they relaxed by playing pinochle and lunching at Luchow's, fond memories of which Abe had always.

Abe's keen interest in toxicology was

not diluted by his relocation to Nassau County, New York, to begin private medical practice. In 1938, when the Nassau County Medical Examiner's Office was created, he accepted appointment as its first Chief Toxicologist. He held this position until 1972, continuing as a Consultant to the Office until his death. Through his dedication to our discipline and his endless striving for excellence, Abe was responsible for establishing that laboratory as one of the finest in the country. Indeed, his friends, Drs. T. Curphey, former CME of Nassau, and Leslie Lukash, current chief, benefitted from his valuable assistance and good counsel to make the Nassau County Office among the best in the nation.

Abe's interests extended beyond toxicology, although that was one of his first loves. From 1956 to 1966 he was Chairman of the Department of Medicine at the institution now known as the Nassau County Medical Center and he co-chaired the Department of Internal Medicine at the Brunswick Hospital Center on Long Island from 1948 to the time of his death. He also was an attending physician at NYU-Bellevue and Associate Clinical Professor at NYU Post-Graduate School of Medicine. He was a founder and Fellow of the Nassau County Medical Society, serving as its President in 1968-1969. Abe was a Diplomate in internal

## Freireich continued

medicine, a Fellow of the American College of Physicians, and a Fellow of the New York Academy of Medicine. He developed and directed one of the earliest and most effective Poison Control Centers in the country at the Nassau County Medical Examiner's Office.

The many contributions Abe made to the American Academy of Forensic Sciences are well-known. He was a founding member and served as program chairman of the fledgling Academy for several consecutive years. Elected fifth President of AAFS for the 1954-1955 term, he served in that office with distinction. He faithfully attended Academy meetings and was a participant in its affairs, scientific and administrative, until problems of health prevented him from doing so as much as he would have liked.

Abe gave unselfishly of his time and talent to the National Safety Council and will be remembered by many of that group as an assertive force in the struggle against DWI and its tragic consequences.

Through Abe's vigorous leadership and robust support the first Interim Meeting in Toxicology was convened in his laboratories in 1970. These informal meetings were to continue and ultimately serve as the foundation for today's Society of Forensic Toxicologists.

It was totally fitting that the Toxicology Section of AAFS should nominate him to be the recipient of the Alexander O. Gettler award for excellence in Forensic Toxicology. No one deserved that honor more. It was equally sad, however, that the award had to be bestowed posthumously, depriving Abe of the pleasure of receiving it. Forensic toxicology is surely diminished by the loss of Abraham W. Freireich.

## Educational Research Award

Paul W. Hale Jr., a graduate student at the Department of Pharmacology, St. Louis University School of Medicine and the fourth recipient of the SOFT ERA, was recently awarded additional funds by SOFT for the completion of his project entitled "An Investigation into the Cardiotoxicity of Thioridazine: Emphasis on the Ring Sulfoxide Metabolite." Mr. Hale's advisor is Dr. Alphonse Poklis.

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# Research Queries and Replies

## High Blood and Brain Cocaine Concentrations Following Intranasal Administration

Robert H. Cravey  
Office of the Sheriff/Coroner  
County of Orange  
Santa Ana, CA

The number of cocaine-induced or related deaths has been growing rapidly in our county. In 1984 alone, we have had 21 deaths attributed to cocaine, and the drug has been found in a large number of cases in which it was not considered related to the cause of death. In 12 of the cocaine fatalities, this was the only drug found. In 6 cases ethanol was found in addition to cocaine, and in 3 cases other drugs were found present and probably contributed to the fatal outcome. In 6 of the 21 cases, administration was intravenous.

In these 21 cases, as well as many other cases over the past years, the blood cocaine concentrations have usually been less than 10 mg/L and most often less

than 5 mg/L. Two recent cases, described below, are examples of exceedingly high blood and brain cocaine concentrations following intranasal use of the drug.

### Case 1

A 37 year old, male musician weighing 203 lbs was found dead in bed. The scene had not been disturbed when the coroner arrived. The body was nude and the genitalia was covered with vaseline. Pornographic magazines were by the body opened to various pages. Bed-side paraphenelia indicated the use of cocaine intranasally. At autopsy, the lungs showed marked congestion and edema. The lumen was filled with a hemorrhagic frothy fluid. The brain showed mild edema. Concentrations of cocaine and benzoylecognine are given in the table. The cause of death was determined to be pulmonary edema due to acute cocaine intoxication. The mode of death was determined to be accidental.

### Case 2

A 24 year old female measuring 67 inches and weighing 93 lbs was found

dead in bed fully clothed. She lived alone with three small children. Her husband was in military service abroad. According to her husband and her mother, she was a disturbed, unhappy woman with marital problems and had sought help from a psychologist for a short period of time. She had married, divorced, and remarried her husband, and at the time of death was seeing several other men. It was one of her boyfriends who discovered the body. He later admitted removing a dish containing a considerable amount of cocaine and a straw used for intranasal administration. We obtained these and analyzed the contents. A quite noticeable amount of white powder was visible on the decedent's face and nose. Investigation is not yet complete on this case but there is a good bit of evidence suggesting suicide.

In our laboratory we have analyzed the brain from a number of cocaine fatalities, and in some cases determined the distribution of the drug in the brain. A paper containing this data is nearly complete and will be submitted for publication. Additionally, a stability study of cocaine and benzoylecognine from actual cases has been in progress for some months. This information we also hope to share with you in the near future.

Tissue concentrations are given below:

	Blood	Brain	Liver	Stomach
Case 1				
Cocaine	20.0 mg/L	20.0 mg/kg	71.0 mg/kg	trace
Benzoylecognine	31.0 mg/L	1.5 mg/kg	87.0 mg/kg	
Case 2				
Cocaine	31.0 mg/L	30.0 mg/kg	393.0 mg/kg	85 mg
Benzoylecognine	17.0 mg/L	6.0 mg/kg	82.0 mg/kg	

## Death Due to Propoxur

Robert H. Cravey  
Office of the Sheriff/Coroner  
County of Orange  
Santa Ana, CA

A 44 year old, 140 lb, mental health patient was found dead in a motel room. He had purchased a box of Pest-B-Gon at a local store where he was known and then checked into the motel and paid in advance for a single night. The empty box was found near the body.

The active ingredient in Pest-B-Gon is propoxur (o-isopropoxyphenyl N-methylcarbamate). As the name indicates, it is an insecticide sold for household use. The LD50 orally in rats is 83 mg/kg. A search of the literature revealed no fatal cases in man, and this was confirmed by chemists and toxicologists in the company laboratory.

At autopsy, the lungs showed acute pulmonary edema. The stomach contained 731 g of coarse yellow-brown granular material in a brown watery

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Vice President Rosemary Kincaid will serve as overseer of these committees and President Richard W. Prouty will serve as an ex-officio member of each of the committees.

## New Members

SOFT welcomes our following colleagues as:

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Michael A. Evans      Russell C. Byler  
Harry K. Garber      Sally Watford  
Diane L. Magnin      Joan Vogel  
William Dunn

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Best wishes to our retired members:

June K. Jones      John H. Kenhart

## Research Queries and Replies continued

substance. There were no other remarkable findings.

At the suggestion of the toxicologists at the company, the tissue was hydrolyzed to convert the propoxur to isopropoxyphenol and extracted with chloroform. Identification and confirmation were by gas liquid chromatography with a nitrogen-phosphorus detector and by GC/MS. The blood contained 11.5 mg/L and 943 mg was recovered from the stomach contents. Tissue distribution studies will be completed in the near future and submitted for publication. No alcohol or drugs were found present. The decedent had not been on medications at the time of death. His family stated that he was severely depressed and that he had attempted suicide before.

### Amoxapine Blood-Liver

#### Ratios

(Reply to ToxTalk, Vol. 8, No.2)

Charles L. Winek  
Department of Laboratories  
County of Allegheny  
Pittsburgh, PA

Our experience with the distribution of amoxapine in three fatalities showed different ratios. The results were as follows:

Case 1: January 1983 — Female, age 38, Suicidal

Blood amoxapine = 11.5 mcg/mL  
Liver amoxapine = 112.2 mcg/g  
Ratio (blood:liver) = 1:9.76

Case 2: May 1983 — Male, age 39, Suicidal

Blood amoxapine = 2.8 mcg/mL  
Liver amoxapine = 40.1 mcg/g  
Ratio (blood:liver) = 1:14.32

Case 3: June 1983, Male, age 41, Suicidal

Blood amoxapine = 0.89 mcg/mL  
Liver amoxapine = 16.8 mcg/g  
Ratio (blood:liver) = 1:18.88

In the above three cases the range of ratios is 9.76 to 18.88. The utilization of liver amoxapine levels to calculate blood levels using the average ratio may not reflect an accurate estimate of the actual levels. For example, if we take an average ratio (liver: blood) of 12:1 and calculate blood levels of amoxapine, we would get values of 9.35, 3.34, and 1.40 mcg/mL for cases 1, 2, and 3 respectively. These results show a percentage difference of 16, 18, and 57% from the actual amoxapine blood levels.

### Unexpected Findings in a Terminal Cancer Patient

C. N. Hodnett and J. G. Rio  
Department of Laboratories  
and Research  
Westchester County  
Valhalla, NY

Terminally ill cancer patients seldom become ME or Coroner's cases. The following case illustrates what may be found in such cases even as a result of routine drug therapy.

A 56 year old female, completely bed ridden terminal cancer patient, was found by family members in the early evening expired in her bed. Because of chronic intrafamily problems that were known to the police what otherwise would not have become a Medical Examiner's case did.

Gross autopsy findings were consistent with what would be expected in a person terminally ill with metastasized uterine cancer except for the presence of pink gastric contents containing capsule-like material.

The secobarbital values are consistent with a fatal overdose. The presence of morphine is consistent with its administration for pain. The presence of cocaine was unexpected.

It was found that the woman was prescribed Brompton's Solution for pain relief. Brompton's Solution was popular early in this century, and has been commonly prescribed for terminal cancer patients for the past several years. It contains morphine and cocaine, 20 mg each per 10 mL of cherry flavored 95% ethanol. It is also known as Brompton's Mixture or Cocktail, and is to be taken 3-4 times per day as needed. Ratios and concentrations of the drugs can vary.

The morphine, cocaine, and alcohol concentrations are consistent with occasional use of the drug by the subject. Death was ruled a suicide by acute mixed drug poisoning.

The toxicological findings were as follows:

	Secobarbital	Morphine	Cocaine	Ethanol
Blood	21.8 mcg/mL	0.17 mcg/mL	0.05 mcg/mL	Negative
Brain	61.2 mcg/g	0.25 mcg/g	0.21 mcg/g	
Liver	NA	NA	NA	
Gastric Contents	384 mg	14.5 ng	30 ng	

## Responses to Report Writing Survey

Dr. Ted Siek conducted a survey on forensic toxicology report writing earlier this year. The results of this survey were presented at the 14th Annual SOFT Meeting and are included below.

#### I, A. Reports sent to:

Scattered area pathologists . . . . .	41	In-house pathologists . . . . .	40
Chief medical examiners . . . . .	38	Coroners . . . . .	30
Lawyers . . . . .	18	Police . . . . .	29
Judges . . . . .	4	District attorneys . . . . .	7
Drug clinics . . . . .	1	School Board . . . . .	1
Department of Transportation . . . . .	1	Anyone wanting one . . . . .	1

#### I, B. What is included in report:

Positive findings . . . . .	69	Negative findings . . . . .	62
Quantitation . . . . .	65	General method . . . . .	17
Brief interpretation . . . . .	16	Opinions . . . . .	16
Method details . . . . .	7	Extensive interpretation . . . . .	3

II, A. Format & characterization of reports:  
Individualized, unique reports . . . . . 19  
General format with variation of specifics . . . 37  
Only names and numbers change . . . . . 7

#### II, B. Reports written for:

Pathologists . . . . .	8
Pathologists and toxicologists . . . . .	37
General public . . . . .	14

#### III. The extent of interpretation:

	YES	NO
Fill in the blanks forms? . . . . .	19	46
Pharmacological class indicated? . . . . .	26	42
Pharmacological effects described? . . . . .	25	43
Degree of effect? . . . . .	37	32
Concentration ranges of effects? . . . . .	32	37
Significance of metabolites? . . . . .	29	37
Half-lives and volume distribution? . . . . .	14	52
Administration route? . . . . .	21	48
Time interval? . . . . .	13	54
Cause and manner of death? . . . . .	14	52
References cited? . . . . .	21	46
PM changes indicated? . . . . .	25	44



COMBINED MEETING: C.F.S.S. - A.S.Q.D.E. - S.O.F.T.

September 20 - 27, 1985

Montreal, Canada

C A L L F O R P A P E R S

Name & mailing address of presenting author:

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Has this paper been presented or published before? \_\_\_\_\_ If yes, when and where? \_\_\_\_\_

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Assistant Toxicologist, Office of the Chief Medical Examiner, State of West Virginia, \$28,000 to \$29,400 per year plus fringe benefits. Position involves the analysis of post mortem specimens for alcohol, drugs and poisons. Requires a Ph.D. in chemistry, or related field, with 3 years of technical experience. Experience with capillary gas chromatography and high pressure liquid chromatography highly desirable. Position available approximately July 1, 1985. Interested applicants please forward their resume to Ronald C. Backer, Ph.D. Chief Toxicologist, Office of the Chief Medical Examiner, 701 Jefferson Road, South Charleston, West Virginia 25309.







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