

Yale H. Caplan, Ph.D., D-ABFT, Director

July 16, 2001

David M. Hadden, MD
Fresno County Coroner
760 W. Nielson Avenue
Fresno, California 93706

RE : Linda Adanalian

Dear Dr. Hadden :

I have been asked by David K. Dalition to provide an independent review of the case of Linda Adanalian who died suddenly on February 11, 2000, the autopsy and death investigation of whom were conducted by Dr. Albert Siu of your office. I have been provided with and reviewed the documents listed in the attached appendix. They consist of hospital and medical reports, the autopsy report, a series of toxicology laboratory reports, the reports and opinions of a number of physicians, including cardiac specialists, and a number of toxicologists.

By way of background, I am a forensic toxicologist and board certified in forensic toxicology by the American Board of Forensic Toxicology (ABFT). I was the Chief Toxicologist for the State of Maryland, Office of the Chief Medical Examiner for many years through 1991 and provided toxicology consultations for the Chief Medical Examiner (the late Drs. Russell Fisher and John Smialek) and other pathologists and investigators. I have served as President of the American Academy of Forensic Sciences, President of the Society of Forensic Toxicologists, and currently as President of the ABFT. I was editor of the Forensic Science Foundation's "Medicolegal Death Investigation - Treatises in the Forensic Sciences". I have directed the testing, reviewed and certified reports, and consulted with medical examiners in over 70,000 death investigation cases. I will be pleased to provide you with a complete curriculum vitae if that would be helpful.

Since there have been many competent reports already written, I will not repeat the extensive details, rather focus the discussion on the findings as a whole. Generally, Ms. Linda Adanalian was a 37 year old female without any significant past medical history. On the day of her death, she experienced vomiting and diarrhea, later chest pains and breathing difficulty just prior to her transport to the hospital. She deteriorated quickly and typical medical intervention was unable to sustain her life. Hospital personnel and the initial autopsy could not provide evidence of the cause of her death.

The body was later exhumed and additional specimens provided. More extensive toxicology testing demonstrated significant concentrations of selenium in kidney, liver, lung, and spleen tissues.

The determination of the cause of a death focuses on a triad of factors : 1) History and investigation, 2) Autopsy findings, and 3) Laboratory testing. All must be considered interactively in a deductive manner to develop a final forensic certainty. In this case : 1) The history is that of a healthy 37 year old female. There were no pre-existing medical conditions, no psychiatric indications and no abnormal activities or events prior to or on the day of her death. 2) The autopsy was unremarkable and a number of cardiac pathologists determined that no abnormality existed which could explain the cause of death. 3) The extensive toxicology workup identified selenium at significant elevated concentrations in the various tissue specimens.

In the absence of any significant pre-existing medical conditions and in the absence of any significant pathology, this death can be attributed to a toxicologic cause. The evaluation of the forensic triad, along with consideration of the clinical presentation, leads to the clear conclusion that Ms. Adanalian's death was caused by acute selenium intoxication.

Upon review of the reports, I find that I am in agreement with the reviews provided by Dr. Spiller, Dr. Pfeifer, and the others, except Drs. Schrauzer, Burk, and Nuttall. A number of considerations are important when considering this case :

1. The plasma antemortem selenium concentration of 90 ug/L is unreliable due to the fact that the clinical specimen had been used previously for other tests and that the small residual sample tested later was subject to deterioration and selenium loss.
2. The clinical presentation is consistent with selenium toxicity. In acute intoxication, the characteristic odor is often overlooked or not recorded by emergency personnel and is also a function of the form of selenium ingested which is not known. Further, hair loss and nail changes would not have had time to develop.
3. The postmortem tissue concentrations are markedly elevated and consistent with cases previously reported. The highest concentrations are generally found in liver and kidney which therefore represent the best diagnostic indicator. The delay in analysis, the storage of the specimens, and loss of selenium due to volatilization would contribute to a reduction in the concentrations.
4. The lack of selenium in the hair is consistent with acute exposure.

Therefore, it is my opinion, expressed to a reasonable degree of scientific certainty, that acute selenium toxicity was the cause of Linda Adanalian's death.

Please advise me if you have any questions or if I can be of any further assistance.

Sincerely,

A handwritten signature in black ink, appearing to read "Yale H. Caplan". The signature is fluid and cursive, with a long horizontal stroke extending to the right.

Yale H. Caplan, Ph.D., DABFT

B-01-031