Appendix E-5

Sacramento Bee Report

San Joaquin Environmental Inc.

Environmental Health, Industrial Hygiene, and Occupational Safety Services

7257 N. Maple Avenue, Ste. 108, Fresno, CA 93720 • Tel: (209) 298-8500 • Fax (209) 298-8500

February 2, 1998

Chris Bowman
Environmental Writer
Sacramento Bee
2100 Q Street
Sacramento, Ca 95816

Dear Mr. Bowman:

TREMOLITE-FERROACTINOLITE (SOLID SOLUTION SERIES) CONTAMINATION EL DORADO HILLS-SHINGLE SPRINGS FINAL REPORT

Further to your letter of September 4, 1997, which contained a signed Contract of Retention, a site visitation was made to the Shingle Springs, El Dorado Hills area on Saturday September 6, 1997. The purpose of the site visitation was to undertake sampling for tremolite contamination of residences and the surrounding environment. It is my understanding that tremolite contamination was believed to be in the Shingle Springs area originating from geological deposits of tremolite which were being disturbed during road construction and development of land zoned for residential use.

Background

Tremolite and actinolite are both naturally occurring amphibole minerals. They are chemically very similar and differ primarily in that actinolite has a greater Fe^2 (iron) content. (See Figure 1). Chemically, they are referred to as occurring in a "Solid-Solution Series" in that it is difficult to differentiate where tremolite and actinolite end and begin, respectively. Analysis of what is believed to be tremolite utilizing Transmission Electron Microscopy (TEM), Selected Area Electron Diffraction (SAED), and energy dispersive X-ray analysis (EDX) will often reveal the mineral to be actinolite and not tremolite. Both amphibole minerals occur in metamorphic formations in both contact and regionally metamorphosed rocks. These conditions occur throughout the Sierra Nevada foothill range and, as a result, veins of asbestos are common. By-far the majority of the asbestos found in California is Chrysotile, which is a serpentine mineral that has been extracted commercially. Tremolite frequently occurs as an impurity of chrysotile, however, large deposits of tremolite-actinolite are, geologically speaking, rare.

Sampling Methodology

During the site visitation made to the Shingle Springs area of El Dorado County on September 6, 1997, the residence of Terry Trent was visited. During a tour of the property owned by Mr. Trent, veins of tremolite and surface contamination of tremolite was evident. On the unpaved road leading to Mr. Trent's and a neighbor's residences, tremolite was seen to have been washed onto the road (Cothrin Ranch Road) from exposed roadside veins.

Air sampling for asbestos was conducted outside the residence of Terry Trent, on the northern and southern edges of the property, and inside the residence (family room). In addition, air sampling was conducted at the side of the unpaved Cothrin Ranch Road leading to Mr. Trent's home and a neighbor. During the sampling at the side of the road, six passes were made by a motor vehicle. In addition, air sampling for asbestos was conducted outside the residence of Judy Bolander, at 3329 Woedee Drive. Sampling and subsequent analysis were conducted following the Yamate Level II Method.

Two settled dust samples each were taken from each of the following locations: inside the residence of Judy Bolander (3329 Woedee Drive); the residence of Terry Trent (3893 Wild Turkey Drive); and in the residence of Sue Beck (3540 Cothrin Ranch Road). Sampling was conducted following ASTM Method D5755-95[1], analysis for asbestos was conducted following ASTM Standard Test Method D22.07.P008.

A sample of road dust was collected from the unpaved road leading to the residence of Terry Trent (Cothrin Ranch Road). Sampling and analysis were conducted following EPA Method 600/4-83-043.

A sample of potable well water was collected from the residence of Terry Trent and analyzed for asbestos content following EPA Method 600/4-83-043.

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1 ASTM Method D5755-95 Standard Test Method for Microvacuum Sampling and indirect analysis of dust by Transmission Electron Microscopy for Asbestos structure number concentration (1995)

Results

Table 1 (attached) summarizes the results of analysis of the six microvac dust samples collected from the three residences in the Shingle Springs, El Dorado Hills area.

The two dust samples collected from 3320 Woedee Drive contained 60,300 and 22,110 asbestos structures per square centimeter (s/cm^2). These samples were collected from the living room shelf and above the front door trim (inside), respectively. The asbestos structures were identified mineralogically as chrysotile and tremolite-ferroactinolite forms.

The two dust samples collected from 3540 Cothrin Ranch Road contained 464,408 and 4,145 s/cm^2. These samples were collected from on top of an exposed ceiling beam and on top of the front door trim, respectively. The dust sample collected from the ceiling beam contained chrysotile and tremolite-ferroactinolite forms of asbestos, as well as non-asbestos ferroactinolite. The sample collected above the front door contained only the tremolite-ferroactinolite form of asbestos.

The two dust samples collected from 3893 Wild Turkey Drive contained 8,955 and 11,058 s/cm^2. These samples were collected from on top of a computer in the office and from a dining room shelf, respectively. The asbestos structures were identified mineralogically as chrysotile and tremolite-ferroactinolite forms. The computer dust sample also contained some non-asbestos forms of ferroactinolite.

Table 2 (attached) summarizes the results of analysis of a single potable water sample collected from the kitchen forcet in Mr. Trent's house, 3893 Wild Turkey Drive. Analysis revealed no asbestos detected.

Table 3 (attached) summarizes the results of analysis of a single road dust sample collected from Cothrin Ranch Road. Analysis revealed the sample to contain 0.0046% asbestos by weight. The asbestos structures were identified mineralogically as chrysotile and tremolite-ferroactinolite forms.

Table 4 (attached) summarizes the results of analysis of five air samples for the presence of asbestos. The three air samples collected from 3893 Wild Turkey Drive were found to have asbestos concentrations at or below the limit of detection/analytical sensitivity. The air sample collected from outside the residence located at 3329 Woedee Drive was found to

contain 0.0042 asbestos structures per cubic centimeter (s/cm³), equivalent to 24 structures per millimeter squared (s/mm²). The asbestos structures detected were all found to be chrysotile.

The air sample collected from the side of Cothrin Ranch Road was found to contain 0.2204 s/cm³, equivalent to 81 asbestos s/mm². The asbestos structures detected were all found to be tremolite/actinolite.

Discussion

During the site visit made to the Shingle Springs area on September 6, 1997 outcrops of tremolite-actinolite veins were evident at most road cuttings and areas being developed for homes. On Cothrin Ranch Road tremolite-actinolite was present in mineral veins at the side of the road and had washed onto the unpaved road itself. Air monitoring revealed high levels of tremolite-actinolite fibers being released into the air when a sport utility vehicle was driven past the test site on six occasions during a period of 47 minutes.

The Beck residents, located at 3540 Cothrin Ranch Road, reported that they had experienced rock and mud erosion of road cuttings right above their home, which had washed material down to their front door. The Bolander residents, at 3329 Woedee Drive, had veins of tremolite-actinolite in their front yard left exposed after the area was developed for residential use. Close to Woedee Drive, tremolite-actinolite veins were exposed in other road cuts of this new subdivision, which is next to Oak Ridge High School.

From the limited air and water sampling conducted, levels of asbestos in air and drinking water were generally low in the Shingle Springs area, with the exception of Cothrin Ranch Road, where vehicular traffic on a tremolite-actinolite contaminated unpaved road created conditions for the release of asbestos fibers to the ambient air.

The level of asbestos in dust collected from three residences, all built after 1978, were variable. Levels of asbestos (total of all kinds) in settled dust as determined by the microvac technique are considered low if less than 1000 s/cm². Levels above 10,000 s/cm² are considered generally above background. Levels above 100,000 s/cm² are considered high and indicative of a source of contamination.[1] All three of the residences tested had at least one sample above

1. Millette J.R. and Hayes S.M. (1994) Settled Asbestos Dust Sampling and Analysis. Published by Lewis Publishers.

10,000 s/cm². The Beck residence, located at 3540 Cothrin Ranch Road, which had experienced mud slides from a road cutting the previous year, had a level of 464,408 s/cm² on top of a 4"x8" high ceiling beam.

Elevated levels of tremolite-actinolite within the three residences are most likely due to the naturally occurring tremolite-actinolite mineralization in the area which is being uncovered and released during road construction, commercial and residential development. Exposed tremolite-actinolite in road cuttings is eroding onto sidewalks and roads, increasing the potential of the mineral being broken down further into small enough fragments to become airborne and potentially respirable. The presence of elevated levels of asbestos on high surfaces inside the three residences suggests that the asbestos must have been airborne at some stage.

Currently, there are no federal or state standards for the maximum permissible level of asbestos in ambient air or settled house dust. There are standards for the presence of asbestos in the air of school buildings (kindergarten through 12th grade), as well as standards for the occupational environment. However, these standards cannot be used for comparison with the data from these samples since the residences are not places of employment or school buildings.

Epidemiological studies conducted over the past fifty years have shown that the risks of exposure to the major commercial asbestos fiber types encountered in mining, milling, manufacturing, and product use are increases in lung cancer, the development of mesothelioma asbestosis and pleural plaques. There is an increasing consensus that amphibole exposure (crocidolite, amosite, and tremolite-actinolite) is more hazardous than exposure to chrysotile, particularly as it relates to mesothelioma risk. In addition, there has been some debate as to whether the mesothelioma risk is attributable to chrysotile or to its common contaminant, tremolite. Epidemiological information concerning tremolite as a potential health risk comes from studies of workers occupationally exposed as a consequence of tremolite contamination of minerals, such as chrysolite, vermiculite and talc. In addition, there have been some epidemiological studies of residents of Anatolia, Turkey and Metsovo, Greece where exposures from naturally occurring deposits of tremolite have resulted in pleural thickening and calcifications, malignant pleural mesothelioma, and diffuse interstitial fibrosis. The preponderance of epidemiological evidence indicates that tremolite asbestos

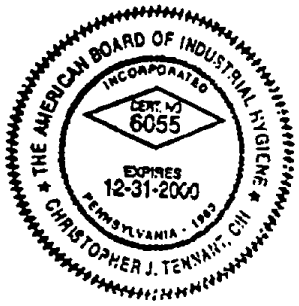
exposures result in respiratory health consequences similar to other forms of asbestos exposure, including lung cancer and mesothelioma.

My limited visual observation of the El Dorado Hills - Shingle Springs area, as well as the limited testing undertaken, does not support the notion that naturally occurring tremolite in the region has been substantially disturbed so as to create an imminent health hazard. Moreover, there is no evidence at this stage to suggest that the El Dorado Hills - Shingle Springs residents have a significantly greater risk of developing respiratory ailments observed in similar tremolite mineralized areas of Turkey and Greece. However, it would seem prudent from a public health perspective to minimize the disturbance of the tremolite mineralization in the area during residential and commercial development as well as minimize the potential for release of tremolite to the air where tremolite is exposed, until the health risks have been evaluated in a more rigorous scientific manner.

Since the tremolite mineralization has been disturbed and there is clear, albeit limited, evidence that residences are showing signs of tremolite accumulation in house dust, a thorough investigation should be undertaken to determine the full extent of tremolite contamination in the area and what long term impact, if any, the tremolite mineralization may have on the health of the residents.

Should you have any questions or if we can be of further assistance, please do not hesitate to contact us.

Sincerely,



Christopher J. Tennant, PhD, CIH, REA
Certified Industrial Hygienist

Professor, Environmental Health/Industrial Hygiene
California State University, Fresno

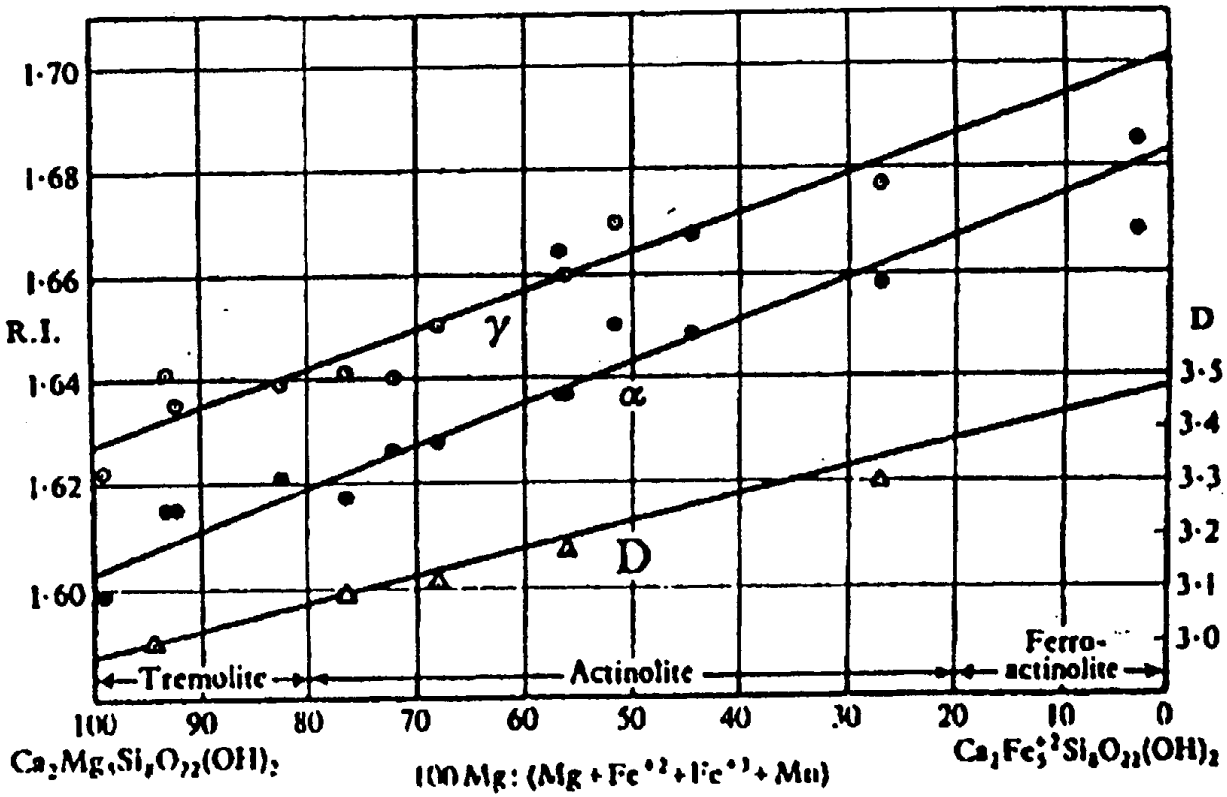


Figure 1. The relation between chemical composition and refractive indices and density of the tremolite–ferroactinolite series.

(Source: Howing. G. R. An Introduction to the Rock Forming Minerals)

Table 1. Results of Quantitative Analysis of Asbestos in Dust (micro-vac) by Transmission Electron Microscopy, El Dorado Hills-Shingle Springs, California, 6 September 1997.

Sample Number	SB05	SB06	SB07	SB08	SB10	SB11
Location	3329 Woedee Drive		3540 Cothrin Ranch Road		3893 Wild Turkey Drive	
	Living room	Above Front door	Ceiling beam	Above front door	Top of computer	Dining room
Area Sampled, cm^2	425.8	387.1	103.2	309.7	103.2	464.5
Volume filtered, ml	0.1	0.1	0.1	0.1	1.0	0.1
Effective filter area, mm^2	190	190	190	190	190	190
Grid Openings Area, mm^2	0.0074	0.0074	0.0074	0.0074	0.0074	0.0074
# Grid Openings Analyzed	15	30	15	20	25	30
Analytical Sensitivity, s/cm^2	4020	2211	16586	4145	995	1843
# Asbestos Structures Counted	15	10	28	1	9	6
Asbestos Concentration, s/cm^2	60300	22110	464408	4145	8955	11058
Asbestos type(s) detected	CH, AC	CH, AC	CH, AC*	AC	CH, AC*	CH/AC

* Ferroactinolite (non-asbestos) was also detected
Codes : CH (Chrysotile); AC (Tremolite-Actinolite series); ND (None Detected)
ASTM Standard Test Method D22.07.P008

Table 2. Results of Quantitative Analysis of Asbestos in Drinking Water by Transmission Electron Microscopy, 3893 Wild Turkey Drive,El Dorado Hills-Shingle Springs, California, 6 September 1997.

Sample Number	SB09
Volume filtered, ml	35.0
Effective filter area, mm^2	190
Grid Openings Area, mm^2	0.0074
# Grid Openings Analyzed	4
# Asbestos Fibers ≥ 10um	0
Analytical Sensitivity, MFL	0.18
Asbestos Concentration, ≥ 10um in length, MFL	< 0.18
Asbestos type(s) detected	ND

Codes : CH (Chrysotile); ND (None Detected) MFL (Millions of Fibers per Liter)
* · Method EPA-600/4-83-043

Table 3. Results of Quantitative Analysis of Asbestos in Bulk road dust Material by Transmission Electron Microscopy, Cothrin Ranch Road, El Dorado Hills- Shingle Springs, California, 6 September 1997.

Sample Number	Organic Wt (%)	Acid-Soluble Wt (%)	Asbestos Weight (%)	Asbestos Type(s)	Residue Weight (%)
SB15	1.4	4.0	0.0046	AC, CH	94.6

Legend:
AC (Tremolite-Actinolite)
CH (Chrysotile);

Method EPA-600/4-83-043

Table 4. Results of Quantitative Analysis of Asbestos in Air by Transmission Electron Microscopy , El Dorado Hils-Shingle, Springs, California, 6 September 1997.

Sample Number	Sample Location	Type of Sample	Sample Media	Flow Rate (liters/min)	Volume (liters)	Analytical Sensitivity	Structure per cc	Structures per mm²	Asbestos Type(s)
SB01	North edge of Property 3893 Wild Turkey Dr	Area Air Sample	25mm, 0.45um MCEF	9.0	2232	0.0023	0.0023	14	Chrysotile
SB02	South of Residence 3893 Wild Turkey Dr	Area Air Sample	25mm, 0.45um MCEF	8.75	2135	0.0024	0	0	ND
SB03	Family Room 3893 Wild Turkey Dr	Area Air Sample	25mm, 0.45um MCEF	10.0	2380	0.0021	0	0	ND
SB04	Yard - 3329 Woedee Dr	Area Air Sample	25mm, 0.45um MCEF	10.0	2470	0.0021	0.0042	27	Chrysotile
SB12	Side of Cothrin Ranch Road	Area Air Sample	25mm, 0.45um MCEF	3.013	141.6	0.0367	0.2204	81	Actinolite
SB13	Blank	Area Air Sample	25mm, 0.45um MCEF	0	1500	0	NA	NA	NA
SB14	Blank	Area Air Sample	25mm, 0.45um MCEF	0	0	0	NA	NA	NA

ND = Not Detected
NA = Not Analyzed

*Analytical Method: Yamate Level II

Forensic Analytical

FAX MEMO

DATE: 1/29/98

TO: CHRIS BOWMAN

COMPANY: SACRAMENTO BEE
916-321-1996

FAX#: 916-321-~~1969~~ 1109

FROM: MARK FLOYD

RE: EL DORADO COUNTY
FASI RN 273391

#PAGES: 3 (including coversheet)

MESSAGE:

Attached is a breakdown (by asbestos type) of the initial and normalized final results from asbestos analysis of samples from the referenced project. To reiterate the analytical procedures used in this project, the microvac samples were initially analyzed at ~20,00x magnification to the limits specified by the reference method (ASTM Method 5755-95). Only one amphibole structure was counted in the six samples in the initial analysis.

Since it was expected that amphibole asbestos would be detected in all samples, we were requested to analyze additional grid openings until any amphiboles were detected. All six microvac samples were reanalyzed at reduced magnification (8800x), scanning for amphiboles only. Based on EDX spectra, actinolite (asbestos) and ferroactinolite (non-asbestos) were seen; no structures were detected that we would identify as tremolite.

Additional openings (up to 20) were scanned until at least one countable amphibole asbestos structure was detected. A total of 75 additional openings were counted. The asbestos counts from the first ten openings were normalized to the total number of openings counted and then added to the number of amphiboles counted, yielding the asbestos structure counts noted in the attached table.

Please call me at 510-887-8828 if you have any questions.

San Francisco Office: [illegible] Hayward, California [illegible] • Telephone: [illegible]
Los Angeles Office: [illegible] Rancho Dominguez, California [illegible] • Telephone: [illegible]

Forensic Analytical

QUANTITATIVE ANALYSIS REPORT
ASBESTOS IN DUST (MICRO-VAC)
by Transmission Electron Microscopy*

San Joaquin Environmental
7257 N. Maple Avenue, Suite 108
Fresno, CA 93720

Page: 1/2
Client ID: 2968
Report Number: 273391
Date Received: 09/09/97
Date Reported: 12/02/97

Job #: not specified
Site: El Dorado County

Analyst: BB,AC,MF
Date Analyzed: 10/20/97-12/02/97

ASBESTOS-TYPE BREAKDOWN				
Client Sample Number		SB05	SB06	SB07
20,000x magnification	#GO analyzed	10	10	10
	#Chrysotile	9	3	18
	#Actinolite	0	0	0
8,000x magnification	#GO analyzed	5	20	5
	#Actinolite	1	1	1
Normalization	#GO analyzed	15	30	15
	#Chrysotile	14	9	27
	#Actinolite	1	1	1
	#Asbestos	15	10	28
Area sampled, cm2		425.8	387.1	103.2
Volume filtered, ml		0.1	0.1	0.1
Effective filter area, mm2		190	190	190
Grid opening area, mm2		0.0074	0.0074	0.0074
Analytical sensitivity, s/cm2		4,020	2,211	16,586
Asbestos concentration, s/cm2		60,300	22,110	464,408

QUANTITATIVE ANALYSIS REPORT
ASBESTOS IN DUST (MICRO-VAC)
by Transmission Electron Microscopy*

San Joaquin Environmental
7257 N. Maple Avenue, Suite 108
Fresno, CA 93720

Page: 2/2
Client ID: 2968
Report Number: 273391
Date Received: 09/09/97
Date Reported: 12/02/97

Job #: not specified
Site: El Dorado County

Analyst: BB,AC,MF
Date Analyzed: 10/20/97-12/02/97

ASBESTOS-TYPE BREAKDOWN				
Client Sample Number		SB08	SB10	SB11
20,000x magnification	#GO analyzed	10	10	10
	#Chrysotile	0	3	1
	#Actinolite	0	0	1
8,000x magnification	#GO analyzed	10	15	20
	#Actinolite	1	1	0
Normalization	#GO analyzed	20	25	30
	#Chrysotile	0	8	3
	#Actinolite	1	1	3
	#Asbestos	1	9	6
Area sampled, cm2		309.7	103.2	464.5
Volume filtered, ml		0.1	1.0	0.1
Effective filter area, mm2		190	190	190
Grid opening area, mm2		0.0074	0.0074	0.0074
Analytical sensitivity, s/cm2		4,145	995	1,843
Asbestos concentration, s/cm2		4,145	8,955	11,058

Forensic Analytical

FAX MEMO

DATE: 2/24/98

TO: CHRIS BOWMAN

ORG: SACRAMENTO BEE

FAX#: 916-321-1109
916-321-1996

FROM: MARK FLOYD

RE: EL DORADO COUNTY
FASI RN 273391

#PAGES: 1 (including coversheet)

MESSAGE:

At your request, I have reviewed the countsheet for an air sample in the referenced project. For Sample SB12, six actinolite and no additional asbestos structures were detected in the ten grid openings analyzed. Two structures, recorded as fibers, were over 5 microns in length: specifically, 10.2 and 19.5 microns. Unfortunately, the diameter of these fibers was not recorded, so it is unknown whether they would be counted as "OSHA fibers," which are greater than 0.25 micron in diameter.

The other four structures were between 2 and 3.5 microns long, inclusive, and were recorded as matrix structures. Each structure counted contributes 0.03674 to the s/cc concentration. The total asbestos concentration in this sample was calculated as 6 x 0.03674 = 0.2204 s/cc. If only the structures greater than 5 microns in length are considered, the asbestos concentration would be 2 x 0.03674 = 0.0735 s/cc.

Please call me at 510-887-8828 if you have any questions.

San Francisco Office [illegible] Hayward, California [illegible] • Telephone [illegible] FAX [illegible]
Los Angeles Office [illegible] Rancho Cucamonga, California [illegible] • Telephone [illegible] FAX [illegible]

FAX MEMO

DATE: 1/29/98

TO: CHRIS BOWMAN

COMPANY: SACRAMENTO BEE

FAX#: 916-321-1109
916-321-1996

FROM: MARK FLOYD

RE: EL DORADO COUNTY
FASI RN 273391

#PAGES: 5 (including coversheet)

MESSAGE:

Attached are breakdowns (by asbestos type) of the results from asbestos analysis of air and bulk samples from the referenced project. No asbestos was detected in the water sample submitted with this project (SB09), so no breakdown is available.

The air samples were analyzed by the standard Yamate Level II procedure, in which all asbestos structures are counted that are greater than 0.2 microns long and have an aspect ratio of $\geq$ 3:1. Two of the samples contained no asbestos, two contained only chrysotile asbestos, and one contained only actinolite asbestos.

The bulk sample was analyzed using a modified EPA procedure in which the sample was gravimetrically reduced by ashing and acid-washing. The residue was suspended, aliquots were filtered, and the filters were mounted on TEM grids. In the analysis, large structures were counted at low magnification and small structures were counted at a higher mag. The asbestos concentration in the sample was calculated by first determining the volume of each asbestos structure counted and using magnification and density conversion factors to determine asbestos mass. The mass detected in the high magnification analysis was then normalized to the number of grid openings analyzed and the aliquot volume filtered for the low magnification analysis. Since a known residue mass was passed through a known filter area, and the filter area analyzed is known, the normalized asbestos mass in the residue can be determined, and then back-calculated to weight percent asbestos in the original sample. The attached table breaks down by asbestos type the number of structures counted, their mass, and their contribution to the calculated asbestos weight percent in the sample.

San Francisco Office [illegible] Los Angeles Office [illegible]

Forensic Analytical

QUANTITATIVE ANALYSIS REPORT
ASBESTOS IN AIR
by Transmission Electron Microscopy*

San Joaquin Environmental
7257 N. Maple Avenue, Suite 108
Fresno, CA 93720

Page:	1/1
Client ID:	2968
Report Number:	273391
Date Received:	09/09/97
Date Reported:	12/02/97

Job #: not specified
Site: El Dorado County

Analyst:	BB,AC,MF
Date Analyzed:	10/20/97- 12/02/97

ASBESTOS-TYPE BREAKDOWN					
Client Sample Number	SB01	SB02	SB03	SB04	SB12
#Grid openings analyzed	10	10	10	10	10
#Chrysotile counted	1	0	0	2	0
#Actinolite counted	0	0	0	0	6
#Asbestos counted	1	0	0	2	6
Grid opening area, mm2	0.0074	0.0074	0.0074	0.0074	0.0074
Air volume sampled, L	2232	2135	2380	2470	141.6
Analytical sensitivity s/cc	0.0023	0.0024	0.0022	0.0021	0.0367
Asbestos concentration, s/cc	0.0023	<0.0024	<0.0022	0.0042	0.2202

Samples SB13 & SB14 were blanks and were not analyzed.

Forensic Analytical

QUANTITATIVE ANALYSIS REPORT
ASBESTOS IN BULK MATERIAL
by Transmission Electron Microscopy*

San Joaquin Environmental
7257 N. Maple Avenue, Suite 108
Fresno, CA 93720

Page:	1/1
Client ID:	2968
Report Number:	273391
Date Received:	09/09/97
Date Reported:	12/02/97

Job #:	not specified	Analyst:	BB,AC,MF
Site:	El Dorado County	Date Analyzed:	10/20/97-12/02/97

ASBESTOS-TYPE BREAKDOWN		
Client Sample Number		SB15
20,000x magnification	#GO analyzed	10
	#Chrysotile	11
	#Actinolite	0
2,650x magnification	#GO analyzed	20
	#Actinolite	5
Normalization	#GO analyzed	30
	#Chrysotile	33
	#Actinolite	8
	#Asbestos	41
	Actinolite mass, pg	7.3296
	Chrysotile mass, pg	0.1920
	Asbestos mass, pg	7.5216
Actinolite percent of mass		97
Chrysotile percent of mass		3
Actinolite concentration, weight %		0.0045
Chrysotile concentration, weight %		0.0001
Asbestos concentration, weight %		0.0046

San Francisco Office [illegible] Hayward, California [illegible] Telephone [illegible] FAX [illegible]
Los Angeles Office [illegible] Rancho Cucamonga, California [illegible] Telephone [illegible] FAX [illegible]

Forensic Analytical

FAX MEMO

DATE: 11/18/97

TO: JASON ALLEN

COMPANY: SAN JOAQUIN ENVIRONMENTAL

FAX#: 209-298-9500

FROM: MARK FLOYD

RE: EL DORADO COUNTY
FASI RN 273391

#PAGES: 1 (including coversheet)

MESSAGE:

This memo provides the results of your request to reanalyze microvac samples from the referenced project. Specifically, you were expecting that amphibole asbestos would be detected in all samples and you wanted to investigate some of the samples that only appeared to contain chrysotile asbestos in the initial analysis.

Reanalysis of samples SB05, SB06, and SB07 was performed 11/17/97. Since amphibole structures are usually much larger than chrysotile, and since we figured we'd need to cover a lot of filter area, we scanned a 8800x (not the usual 20,000x). Tremolite and actinolite asbestos, as well as ferroactinolite (non-asbestos), were seen in these samples. The analyst estimates that there was approximately one of these fibers in 20-30 grid openings. Because we only ran ten grid openings in the initial analyses (as required by the method), it is understandable how we only saw one amphibole structure in the six samples in this set.

Please call me at 510-887-8828 if you have any questions.

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Los Angeles Office: 2939 Pacific Commerce Drive, Rancho Dominguez, California 90221 • Telephone: 310/763-2374 Fax: 310/763-8084

San Joaquin Environmental Inc.

Environmental Health, Industrial Hygiene, and Occupational Safety Services

7257 N. Maple Avenue, Fresno, CA 93720 • Tel: (209) 298-8500 • Fax: (209) 298-8500

fax

to: CHRIS BOWMAN

company: SACRAMENTO BEE

fax #: 916 ~~530~~ 987 8828

from: CHRIS TENNANT

date: 11/18/97

subject:

pages: including cover sheet

NOTES:

San Joaquin Environmental Inc.

Environmental Health, Industrial Hygiene, and Occupational Safety Services

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fax

to: CHRIS BOWMAN

company: SACRAMENTO BEE

fax #: 916 321 1109

from: CHRIS TENNANT

date: 2-5-98

subject:

pages: including cover sheet

NOTES: Chris,
The word "actinolite" used by Forensics on their report means "Tremolite - Actinolite series (See report). I changed it on Table 4 but where ever you see actinolite reported it means Tremolite-actinolite as per Mark Floyd.

Forensic Analytical

11 February 1998

Mr. Chris Bowman
Environmental Writer
Sacramento Bee
2100 Q Street
Sacramento, CA 95816

RE: Eldorado Hills Photomicrographs
FASI SP# 98007

Dear Chris:

Enclosed are three photomicrographs of asbestos structures detected in dust samples from the referenced project. Each photo is numbered on the back and described on the attached page.

Please call me at 510-887-8828 if you have any questions.

Sincerely,

Mark Floyd
Electron Microscopy Supervisor

San Francisco Office: 3777 Depot Road, Suite 409, Hayward, California 94545 • Telephone: 510/887-8828 800/827-FASI Fax: 510/887-4218
[illegible] Pacific Commerce Drive Rancho Dominguez, California 90221 • Telephone: 310/763-2374 Fax: 310/763-8684

Forensic Analytical

PHOTOMICROGRAPH LOG
ASBESTOS IN DUST (MICRO-VAC)
by Transmission Electron Microscopy

San Joaquin Environmental
7257 N. Maple Avenue, Suite 108
Fresno, CA 93720

Page:	1/1
Client ID:	2968
Report Number:	273391
Date Received:	09/09/97
Date Reported:	02/11/98

Job #: not specified
Site: El Dorado County

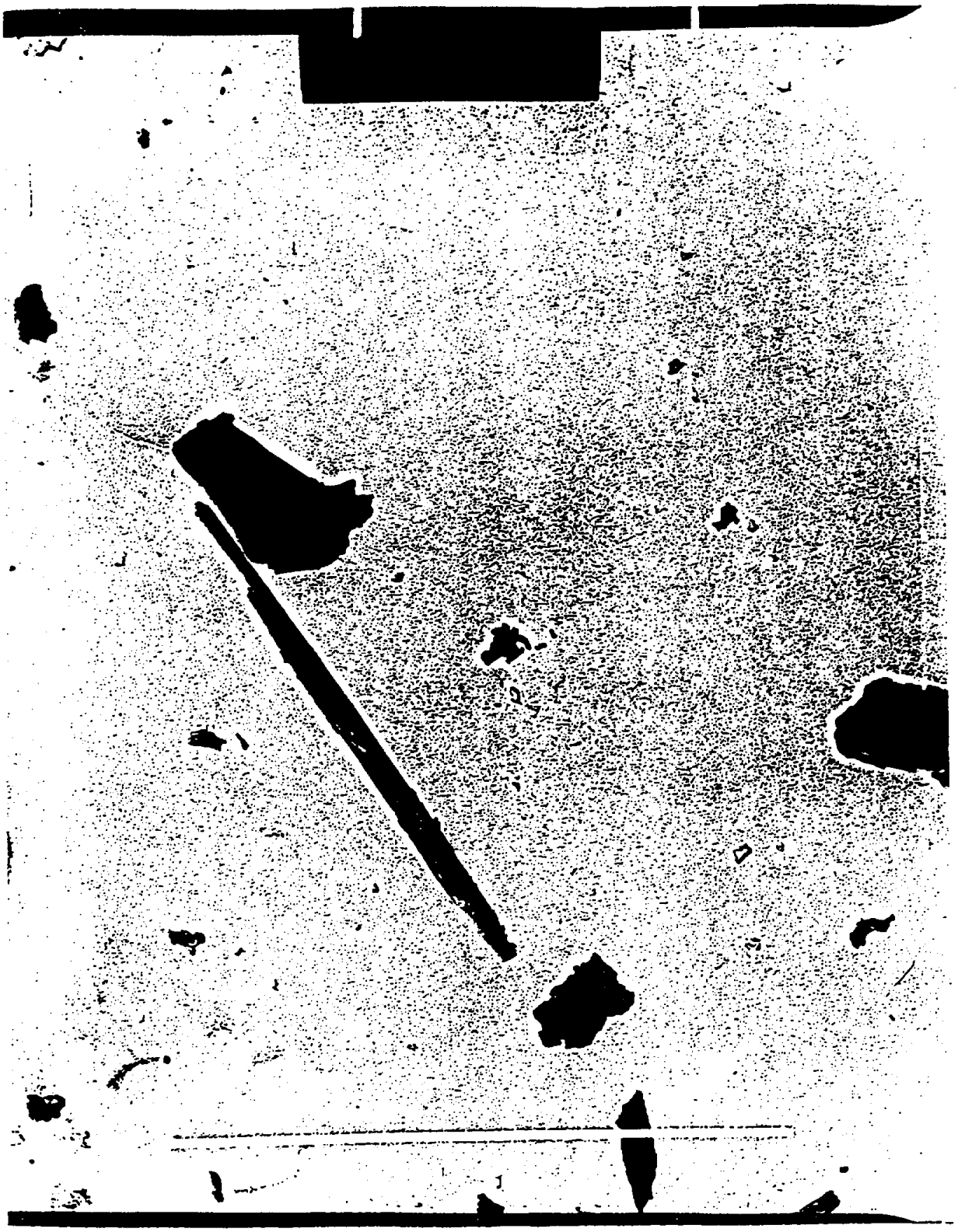
Analyst: MF
Date Analyzed: 02/11/98

PHOTO#	MAGNI-FICATION*	BAR LENGTH, microns**	PHOTO DESCRIPTION
1	10,000	5	Actinolite fiber from sample SB05 (Bolander residence, shelf between living rm and kitchen). Fiber is ~6.25 microns long and 0.75 microns across. Note: 2 chrysotile fibers (each <1 micron long) are also present.
2	10,000	5	Chrysotile fibers from sample SB07 (Beck residence, on ceiling beam. Longest fiber is approx. 7 microns long and 0.1 micron across.
3	5,000	10	Actinolite fiber from sample SB15 (unpaved road dust). Fiber is approx. 9 microns long and 0.5 microns across.

* Magnifications listed are for the 3.25 x 4 inch negative. Mags on 8 x 10 enlargements are 2.5 times greater.

** BAR refers to the white line across the bottom of each image which serves as a measurement scale.

G:\PUBLIC\TEM\WPREPORT\273391TM.SJE



RESUME

Christopher J. Tennant PhD., CIH., REA

7257 North Maple Avenue #108
Fresno, California 93720

Tel: (209) 298-8500
FAX: (209) 298-9500
Email: chris_tennant@csufresno.edu

EDUCATION

1984	University of Aston in Birmingham, UK, Department of Environmental and Occupational Health, Doctor of Philosophy (PhD).
1981	Plymouth Polytechnic, Plymouth, UK, Department of Environmental Science, Bachelor of Science (BS), Specialism: Pollution Studies.

APPOINTMENTS

1993 - Present	Professor, Environmental Health/Industrial Hygiene, Department of Health Science, California State University, Fresno, California.
1986 - 1993	Associate Professor, Environmental Health/Industrial Hygiene, Department of Health Science, California State University, Fresno, California.
1985 - 1986	Manager, Environmental Advisory Unit, Wardell Armstrong Consultants, Newcastle-under-Lyme, UK.
1984 - 1985	Postgraduate Research Fellow, Health and Safety Unit, Department of Chemical Engineering, University of Aston in Birmingham, UK.
1982 - 1984	Lecturer, Department of Environmental and Occupational Health, University of Aston in Birmingham, UK.

PROFESSIONAL SOCIETIES

American Board of Industrial Hygiene (ABIH).
Member 1991 - Present.
American Industrial Hygiene Association (AIHA).
Member 1988 - Present. 1996
Toxicology Committee, 1990 - [redacted]. 1996
Computer Applications Committee, 1990 - [redacted].
Proficient Analyst, Proficiency Analytical Testing (PAT) Program.
1988 - [redacted]. 1996

Central California Chapter (AIHA) Member 1990 - 1996.
President 1992, 1993
President Elect 1991,
Founder Member 1990.
American Conference of Governmental Industrial Hygienists (ACGIH).
Member 1988 - Present.
National Environmental Health Association (NEHA)
Member 1986 - 1991
Epidemiological Technical Committee, 1987 -1990.
Environmental Toxicology Committee, 1987 - 1990.
Hazardous Materials Emergency Management Committee, 1987 - 1990.
Occupational Health Committee, 1987 - 1990.

DESIGNATIONS

AHERA Accredited Building Inspection and Management Planning for Asbestos

AHERA Accredited Contract Supervisor

AHERA Accredited Asbestos Abatement Project Designer

Certified Industrial Hygienist (CIH), Comprehensive Practice, American Board of Industrial Hygiene (ABIH).

Certified Asbestos Consultant (CAC), State of California Division of Occupational Safety and Health (DOSH) Cal/OSHA.

Registered Environmental Assessor (REA), State of California Registration # 02238.

Certified Lead-Related Construction Project Monitor, California Department of Health Services (DHS), Childhood Lead Poisoning Prevention Branch.(Interim).

Certified Lead-Related Construction Supervisor, California Department of Health Services (DHS), Childhood Lead Poisoning Prevention Branch. (Interim).

Certified Lead Related Construction Inspector/Assessor, California Department of Health Services (DHS), Childhood Lead Poisoning Prevention Branch.(Interim).

Certified Lead Related Construction Project Designer, California Department of Health Services (DHS), Childhood Lead Poisoning Prevention Branch.(Interim).

Licensed XRF Operator, California Department of Health Services, Radiologic Health Branch.

Forensic Analytical

- Fax Cover Sheet -

Date: 3/14/97

Pages: 3

To: Chris Bowman, Sacramento Bee

Fax Phone: 916-321-1996

From: David Kahane

Subject: Brief History Summary & Resume

San Francisco Office: 3777 Depot Road, Suite 409, Hayward, California 94545 • Telephone: 510/887-8828 800/827-FASI Fax: 510/887-4218
Los Angeles Office: 2959 Pacific Commerce Drive, Rancho Dominguez, California 90221 • Telephone: 310/763-2374 Fax: 310/763-8684

THIS IS FORENSIC ANALYTICAL

Answers to your questions...Solutions to your problems!

Forensic Analytical is an analytical laboratory and consulting firm specializing in the industrial hygiene and environmental health sciences. Founded in 1988, Forensic Analytical has become recognized as one of the highest quality specialty firms on the west coast. With experienced staff in both the lab and the field, Forensic Analytical is in a unique position to provide specialty consulting and analytical support to clients as well as providing project support to firms who may wish to augment in-house capabilities.

Our Environmental Services Division specializes in the identification and management of asbestos, lead, and other hazardous materials found in industrial and commercial facilities. Asbestos consulting services are provided by consultants and site surveillance technicians certified by the state of California. Industrial hygiene services are overseen by David Kahane, CIH, and owner of Forensic Analytical.

Forensic Analytical's in-house analytical capabilities include optical and electron microscopy, and atomic absorption (AA), inductively coupled plasma (ICP) and micro-FTIR spectroscopy. Our Laboratory Services Division provides a range of environmental and industrial hygiene analytical services. Forensic Analytical's laboratories are accredited by NVLAP, CA DHS, and AIHA.

Consulting Services

- Hazard Evaluations
- Asbestos Surveys
- XRF Lead Surveys
- O & M Program Development
- Specification Development
- Health & Safety Program Development
- Forensic Consulting

Project Management Services

- Complete Project Management
- Contractor Selection Assistance
- Air Monitoring
- Abatement Observation
- Work Practices Documentation

Laboratory Services

- Optical Microscopy (PCM/PLM)
- Electron Microscopy (TEM/SEM)
- AA/ICP/micro-FTIR Spectroscopy
- Particle Identification
- Material Characterization
- Specialty Laboratory Consulting
- Trace Evidence Analysis

Specialty Services

- Indoor Air Quality Studies
- Industrial Hygiene Monitoring
- OSHA Compliance Audits
- Bioaerosol Sampling
- Legal Consultation/Case Review

FORENSIC ANALYTICAL

3777 Depot Road, #409
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800-627-3274

2958 Pacific Commerce Drive
Rancho Dominguez, CA 90221
310-763-2374

Forensic Analytical
[illegible]

DAVID KAHANE, CIH

Principal/Director of Laboratory Services
Laboratory Services Division

EDUCATION

M.P.H., Environmental Health Sciences, UC Berkeley, 1982
B.A., Physiology, UC Berkeley, 1980

CERTIFICATIONS AND REGISTRATIONS:

Certified Industrial Hygienist #5549, American Board of Industrial Hygiene

SHORT COURSES

Comprehensive Review of Industrial Hygiene, Rocky Mountain Center for Occupation and Environmental Health, 1989
NIOSH 582 Asbestos Identification and Sampling, University of North Carolina at Chapel Hill, 1983
Forensic Microscopy, McCrone Research Institute, Chicago, Illinois, 1981

PROFESSIONAL EXPERIENCE

Founder and principal of Forensic Analytical. Manages daily laboratory operations and customer service functions. Oversees all aspects of marketing and new business development. Technical expertise in litigation support for asbestos cases, research on dioxins and furans generated during fires, and pesticide surveys. Performs industrial hygiene and indoor air quality investigations for a variety of military, commercial and school clients. On-site monitoring of airborne asbestos, statistical evaluation of asbestos survey data, and experimental design for indoor asbestos exposure assessment. Analysis of airborne fibers and bulk materials for asbestos concentrations.

Survey design and statistical analysis of custodial worker's exposure to asbestos reentrainment at San Francisco Federal Building. Twenty four hour real time monitoring of asbestos to examine fluctuations in airborne concentrations in indoor environment. Experience in routine analysis of PCBs and pesticides in biological tissue, transformer oils, air, and soil. Routine analysis of formaldehyde and asbestos. Analysis of steroid and protein antigens in human, monkey, rat, and mouse tissues by radioimmunoassay; antibody purification and titration methodologies.

PROFESSIONAL AFFILIATIONS

Board of Directors, Lead Solutions, 1993-1994
Board of Directors, National Environmental Information Association, 1993-Present
Board of Directors, California Environmental Information Association, 1991-1993
American Society for Testing Materials, Member, 1992-Present

American Industrial Hygiene Association, Member 1992-Present
American Academy of Forensic Sciences, Member, 1980-Present
Steel Structures Painting Council, Member 1992-Present
Cal OSHA Lead Advisory Board, Participant
U.C. Berkeley Center for Environmental Management, Lecturer

PUBLICATIONS AND PRESENTATIONS

D. R. Van Orden, R. J. Lee, K. M. Bishop, D. Kahane, R. Morse, "Evaluation of Ambient Asbestos Concentrations in Buildings Following the Loma Prieta Earthquake," Regulatory Toxicology and Pharmacology, 21, 117-122, 1995.

Jim Millette, David Kahane, Bruce White, "Contamination from Asbestos Dust: How Much is Too Much," presented at Environmental Information Association's 1994 Fall Regional Conferences, Las Vegas, NV, November, 1994.

Moderator/Lecturer, Environmental Information Association, Lead Symposium, San Diego, California (1994) and Tampa, Florida (1995).

D. Kahane, J. Teichman, D. Coltrin, K. Prouty, "A Survey of Lead Contamination in Soil Along Interstate 880, Alameda County, California," presented at Lead Tech '92, Bethesda, MD, October, 1992.

David Kahane, "Asbestos Testing and Building Owner Liability", San Francisco Business Times (The Hidden Building), 1988.

David Kahane and John Thornton, "Determination of the Absolute Density of Glass following the Sink-Float Method," Journal of Forensic Science, 32 (1) 87-92, January 1987.

J. Thornton, S. Kraus, B. Lerner, and D. Kahane, "Solubility Characterization of Automotive Paints." Journal of Forensic Science, 28 (4) 1004-1007, October 1983.

Length
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Expires 6/04/97 at 16:06
Guide E-Mail. Subject : asbestos

<A1>E-mail from: Day@topaz.ucdavis.edu
Subject: asbestos

May 5

Hi Chris,

I was finally able to obtain some time on the instrument I needed. There is no doubt that both samples I picked up at Terry Trent's are asbestos-form amphibole. The x-ray diffraction data clearly identify the amphibole structure. Our back-scattered electron images confirm that they have asbestos-form habit (1 micron wide; 50 microns long), which can clearly be seen by looking at the hand sample. The qualitative chemical analysis we did is consistent with amphibole chemistry and the optical properties (refractive index) rule out the possibility that the asbestos is a form of serpentine.

There is no question that this is amphibole asbestos.

If I can be further help, please let me know.

[illegible]gards

Howard

****
Howard W. Day
Dept. of Geology
UC Davis
Davis, CA 95616

day@geology.ucdavis.edu
TEL: 916-752-2882
FAX: 916-752-0951
****
"Diplomacy is knowing how to say good doggie...
until you can find a big enough rock."

Attributed to Teddy Roosevelt.
****

[illegible] \chiffma\rafi.hmx [illegible]

Acquisition time : 256,1s

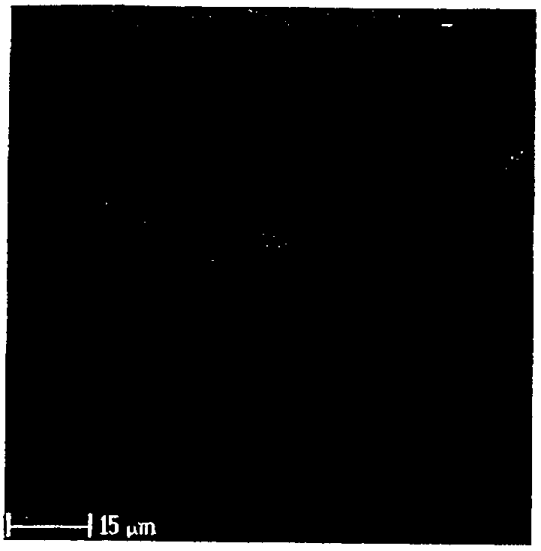
Acquisition type : Beam

Beam Current : 16.4 nA, Acc. Voltage : 15.0 kV, Mag. : 1000.0

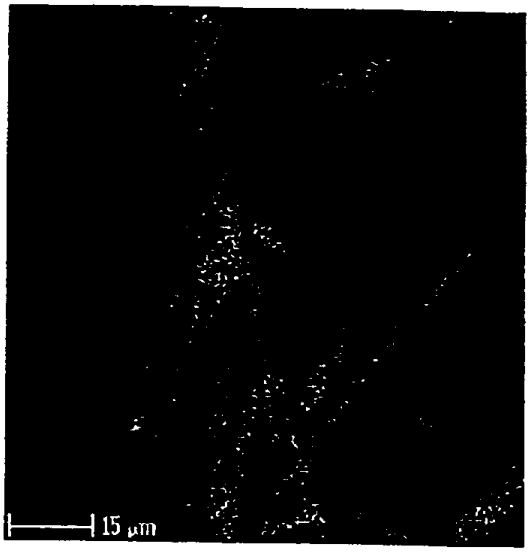
X-Ray : Time = 5.000 ms, NbFrm = 1

Video : NbPix = 10, NbFrm = 2

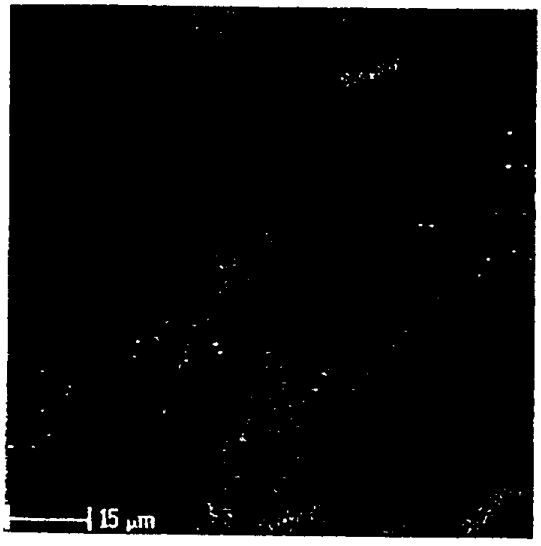
Fe-Ka(Sp3)



Ca-Ka(Sp2)



Si-Ka(Sp1)



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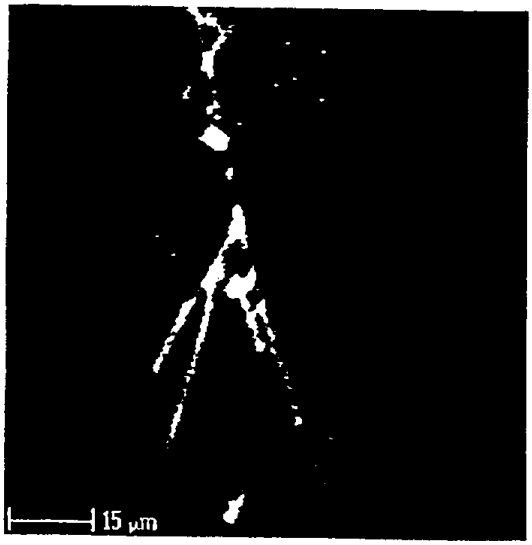

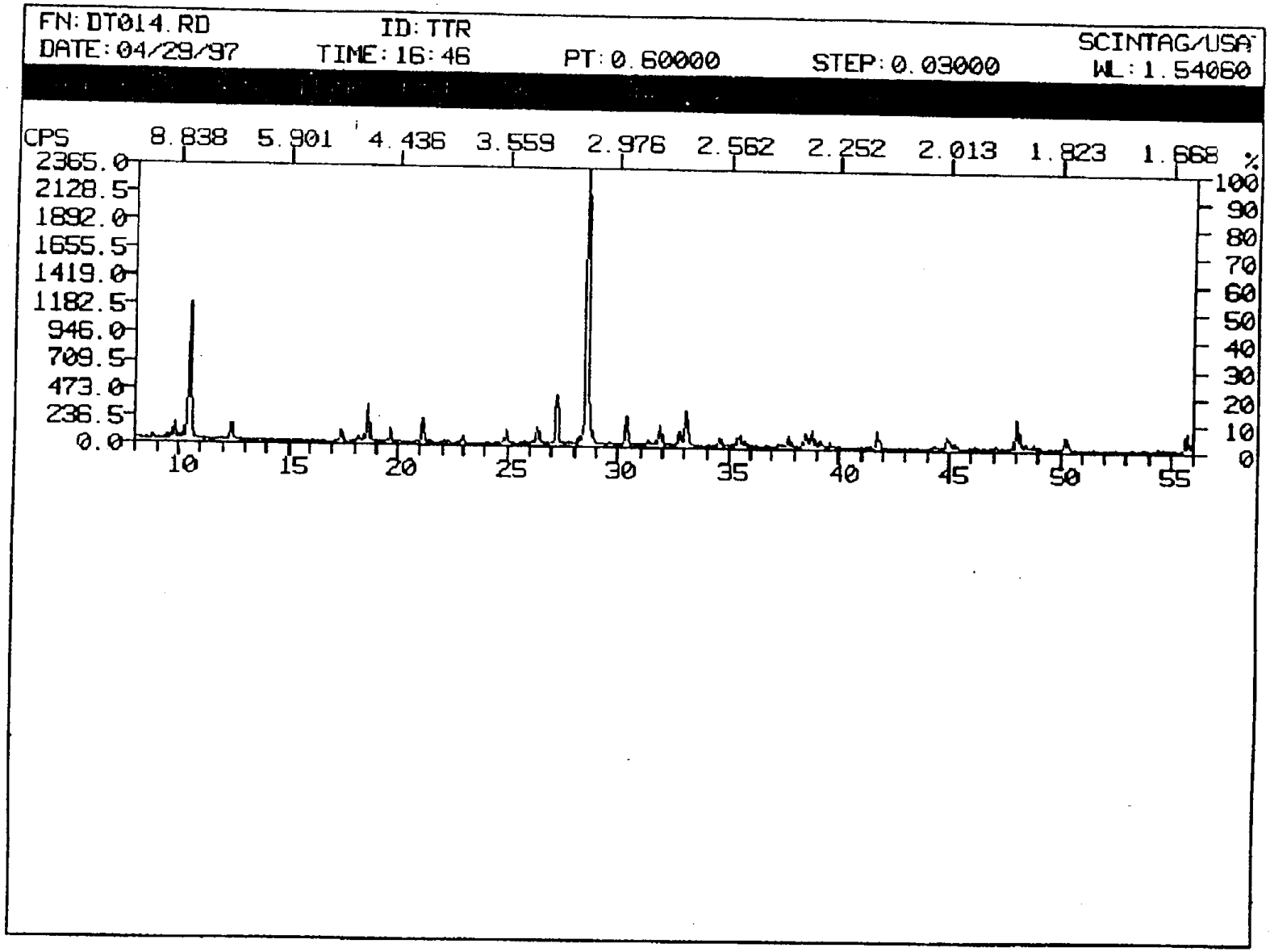
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2365.0
2128.5
1892.0
1655.5
1419.0
1182.5
946.0
709.5
473.0
236.5
0.0
100
90
80
70
60
50
40
30
20
10
0
10 15 20 25 30 35 40 45 50 55

Cancer Surveillance Program
Region 3

A Program of
Sutter Cancer
Center

2800 L Street, Suite 440
Sacramento
CA 95816-5600
(916) 454-6522
FAX 454-6523

September 16, 1997

Chris Bowman
Sacramento Bee
2100 Q Street
Sacramento, CA 95816

Dear Mr. Bowman;

The Cancer Surveillance Program, as Region 3 of the California Cancer Registry, collects information about cancer diagnosed among the approximately 2.9 million residents of 13 counties in the Sacramento area. One of the uses of cancer registry data is to monitor incidence of cancer in an area, and to assess whether the number of new cancer cases is greater than the number that would be expected for the population. I have completed an analysis of cancer incidence in western El Dorado County as you requested. This analysis focused on the number of mesothelioma cases.

The census tract is the geographic division for which we have detailed 1990 population data and is the unit that we usually use to assess cancer incidence. Based on the information you gave me, I included twenty census tracts that included all of the population of the western slope of El Dorado County. These tracts included the towns of Placerville, Diamond Springs, Pollock Pines, Shingle Springs, Cameron Park, El Dorado Hills, Georgetown, Cool and Garden Valley. Because there is a lag time between cancer diagnosis and reporting by the hospital or physician to the registry, we currently have complete information on patients diagnosed through 1995. We examined cancer incidence in these census tracts for the eight-year period 1988-1995 and identified 17 cases of mesothelioma, located in the pleura, diagnosed among residents. The age range of patients was 59 to 85, and they lived in various locations around the county, although none resided in El Dorado Hills. There were approximately two to three cases diagnosed per year between 1988 and 1995.

To estimate the number of cases of mesothelioma of the pleura that would be expected to occur during this eight-year period, we applied the 1988-1992 annual average sex-, race-, and age-specific rates of cancer for the Sacramento region to the corresponding 1990 population of the 20 census tracts. Our calculations showed that in this population during eight years we would expect to see approximately 10 cases of this cancer. Although the number of cases observed was slightly greater than the number of cases expected, these results were within the range of what would be expected by chance. In addition, we know that the population of El Dorado County increased approximately 15% between 1990 and 1995, and this would increase the number of cancer cases that we would expect.

VHA
United to Improve America's Health™