SUPERIOR COURT OF THE STATE OF CALIFORNIA

FOR THE COUNTY OF LOS ANGELES

JEAN C. BRADLEY, Plaintiff, vs. JOHNS-MANVILLE CORPORATION, et al., Defendants.	NO. C 362 335

DEPOSITION OF DAVID H. GARABRANT, M.D., a witness herein, taken by defendants, at 10:20 a.m., on Tuesday, October 7, 1986, at 1420 San Pablo, Suite B-308, Los Angeles, California, before Lucia Moskal, CSR, a Notary Public.

LUCIA MOSKAL
CERTIFIED SHORTHAND REPORTERS

REPORTED BY:
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APPEARANCES OF COUNSEL:

For Plaintiff:

GLICKMAN & GLICKMAN
BY: DAVID R. GLICKMAN, ESQ.

For Wellington Defendants:

BOGAN & JONES
BY: MARY K. JONES, ATTORNEY AT LAW

For Defendant and Cross-Complainant Hill Brothers Chemical:

WASSERMAN, COMDEN & CASSELMAN
BY: DAVID B. CASSELMAN, ESQ.
and
KEVIN H. PARK, ESQ.

LUCIA
MOSKAL

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October 8, 1986

David R. Glickman, Esq.
Glickman & Glickman
9465 Wilshire Boulevard
Suite 525
Beverly Hills, CA 90212

Re: Deposition of David H. Garabrant, M.D.
Bradley v. Johns-Manville, et al.

Dear Mr. Glickman:

Per your request, the following are the questions and answers that you wished to be listed separately:

Page 94, line 12, through page 95, line 2:

"Q. BY MS. JONES: Doctor, are you able to say to a high degree of medical certainty that Mr. Bradley's cancer of the colon was caused by his exposure to asbestos?

A. Based on the studies that I have cited, including both human evidence and animal evidence, it is my opinion that asbestos increased Mr. Bradley's risk, and that if he had not had exposure to asbestos, he would not have contracted colon cancer at the age he did.

Q. And it's your opinion that, to a medical certainty, that the latency period, that is, the time between the first exposure in 1968 and development of

"symptoms in 1977, is sufficient for the development of Mr. Bradley's colon cancer?

A. As we have discussed, I think there is no information in the literature upon which to base that sort of opinion. My opinion is based on analogy to lung cancer in relation to asbestos, which says that is adequate latency, and the relationship between other carcinogens and human cancer which says that 10 years is adequate latency."

There will be no charge for furnishing you with this information.

Very truly yours,

Lucia Moskal
Certified Shorthand Reporters

LM:ps

I N D E X

WITNESS: DAVID H. GARABRANT, M.D.

E X H I B I T S

DAVID H. GARABRANT, M.D.,

a witness herein, having been first duly sworn, testified as follows:

EXAMINATION

BY MS. JONES:

Q. Doctor, my name is Mary Jones, and I'll be asking you most of the questions here today.

Can we start the deposition by having you state your full name for the record, please.

A. Sure. My name is David Hay Garabrant.

Q. How do you spell the middle name?

A. H-a-y.

Q. The last name is G-a-r-a-b-r-a-n-d-t?

A. No "D."

Q. Thank you.

Doctor, the oath that you took today is the same oath you would take in a court of law. It has the same force and effect. If you intentionally lied under oath, you would be subject to a penalty of perjury. Do you understand that?

Is that a "Yes"?

A. Yes.

Q. During a deposition, it's necessary for you to make verbal or oral responses. A nod or shake of the head, or shrug of the shoulders, as we do in normal conversation, is not recorded properly by the reporter, so

if you lapse into that habit, I will just say to you, "Is that a 'Yes' or is that a 'No,'" and then you can give the verbal response and then the reporter can record that. Do you understand?

A. Yes.

Q. Doctor, have you ever had your deposition taken before?

A. No.

Q. Then I'm going to go through some rather extensive admonitions or guidelines for the deposition to be sure that you understand what we expect of you today.

During a deposition, it's typical to ask questions that go far back in time or to ask you for information in your memory, even though you may not have reviewed something immediately or have it in front of you. And although you may not have a precise or complete response, we're entitled to whatever information you do have. I do not, however, want you to guess. So, for instance, if you've reviewed a publication and it was within the last year, then I would be entitled to that information, despite the fact you could not tell me that you reviewed it in May of 1986. Do you understand that?

A. Yes.

Q. Doctor, if I ask you any questions today that do not make any medical sense to you, then just tell me that and I'll try to rephrase it or have you explain to me why it doesn't make medical sense and then rephrase it for you. Don't try to answer a question that doesn't make

any sense.

If I ask you a question that you do not understand, just tell me that and I will rephrase it. If I ask you a question and I'm misspeaking myself and you know it, just indicate that. If I ask you a question and you do not hear me, tell me that.

If you answer a question, I'll assume that you've understood the question and you're answering to the best of your ability. Do you understand that?

A. Yes.

MR. GLICKMAN: Off the record.

(A discussion was held off the record.)

Q. BY MS. JONES: Let's go ahead and start with your C.V., Doctor.

Do you have any questions about what we expect of you today during the deposition?

A. No.

Q. Have you had any medication or alcohol within the last 24 hours?

A. No.

Q. Do you have any reason to believe that you cannot give us your best testimony today?

A. No.

Q. Doctor, we will take a break after about an hour. If you need a break more frequently than that to keep your mind fresh, then tell me that. I don't want you to become overtired. We want your best testimony. If it means we have to take a break every half an hour, then that's

fine. Do you understand?

A. Yes.

Q. Doctor, I have in front of me a copy of your curriculum vitae dated August 1986. Is this your most current curriculum vitae?

A. I'm not sure. It might have been updated since then. If it has been updated --

Q. Doctor, would you take just a moment and look at it and see if there's anything you'd like to add to that because we will be attaching a copy of that to the transcript. So take your time.

A. The only thing that would have changed that some of the papers listed on pages 8 and 9 would be changed -- excuse me -- on 7 and 8 would be changed from "submitted" to "in press." Other than that, it won't have changed.

In fact, I think the secretary will bring in an updated version if you'd rather work from that.

Q. If she's going to copy that, I can go ahead and use this until we get the current one in, and then we'll attach the current one, and as soon as we get it, I'll identify it and have it attached.

Doctor, in looking at the first page of your curriculum vitae, I see that you have received your medical school training at Tufts University; is that correct?

A. Yes.

Q. And your internship at Georgetown?

A. Yes.

Q. And residencies at Harvard and University

Hospital in Boston?

A. Yes.

Q. Doctor, with regard to your residency at Harvard, that was in occupational medicine?

A. Yes.

Q. What exactly is occupational medicine?

A. It is a field within the broad field of preventative medicine, and it focuses on the --

MS. JONES: Off the record, please.

(A discussion was held off the record.)

MS. JONES: Back on the record.

Before we go any further, I'd like to attach a copy of the doctor's curriculum vitae dated August 1986, for David Hay Garabrant, M.D., M.P.H., M.S., and it consists of nine pages.

MR. GLICKMAN: That will be Exhibit --

MS. JONES: Defendants' first in order.

MR. GLICKMAN: -- A.

(Said document was marked Defendants' A for identification by the Notary Public.)

Q. BY MS. JONES: Doctor, with regard to Harvard School of Public Health where you took your residency in occupational medicine, what exactly did you study in that residency program?

A. I studied epidemiology, biostatistics, industrial hygiene, toxicology --

Q. Let me ask you to slow down just a moment. Epidemiology, toxicology, biostatistics, and what else?

A. Industrial hygiene, basic problems in occupational health, which was -- I don't know if you care for this amount of detail--essentially a review of industrial processes and the health hazards associated with exposures in those industries.

Q. All right. Anything else, Doctor?

A. Those would have been the major areas. There were others that were minor.

Q. Doctor, epidemiology is the study of populations of individuals; is that correct?

A. I would define it as the study of patterns of disease in populations.

Q. And toxicology, how would you define that, Doctor?

A. As the study of the effects of foreign -- it's the study of the effects of chemicals and, say, pharmaceutical agents on biologic systems.

Q. The biologic systems, would that be human systems or animal systems?

A. Toxicology would cover both human and animal and some in vitro systems like bacteria or fungi.

Q. And biostatistics, Doctor, what exactly is that?

A. It's a branch of mathematics that is concerned with the use of statistical techniques to analyze data relating to populations and health status.

Q. Industrial hygiene is what, Doctor?

A. That is the field concerned with evaluating

and measuring exposures to chemicals and physical agents, primarily in industry.

Q. And problems in occupational health, you said, was a review of the industrial processes?

A. And the health hazards associated with those processes.

Q. Doctor, during this residency program, did any of your studies involve individuals exposed to asbestos materials of any type?

A. One of my studies did.

Q. What study was that?

A. It was a study of pulmonary function and chest X-ray changes in a group of titanium metal production workers.

Q. Were these titanium metal production workers also exposed to an asbestos material in their work environment?

A. Yes. Some of them were, yes.

Q. One other admonition, Doctor, it's important to let me finish the question completely because I may add something to the end of the sentence that would change your response, and if that happens, it's normal to speak over one another in everyday conversation, but the reporter can't record that very well.

A. I understand.

Q. So I may just stop if you start to speak and then finish my question and you may want to change your answer because of that. That I do because it's easier for

the reporter to record that way. So if you can, even though I sometimes pause mid-sentence, let me finish completely and then give your response. Okay?

A. Yes.

Q. Thank you.

What group did you use in this study, Doctor?

A. It was a cohort of primarily men who made titanium metal at a plant in Ashtabula, Ohio.

Q. Did you collect the data for the study or have it collected at your direction?

A. I collected it with other investigators, yes.

Q. How many individuals were in this study?

A. Approximately 209.

Q. What was the purpose of the study?

A. To determine if there were substances in the work environment that led to pulmonary disease or pulmonary symptoms.

Q. Did you reach any conclusions with regard to substances in the work environment leading to pulmonary disease or processes?

A. Yes, we did.

Q. What conclusions did you reach, Doctor?

A. I'm speaking from memory because that study was done a long time ago.

Q. All right.

A. To the best of my recollection, we found that there was an excessive amount of pleural thickening

in the group, which seemed to be due partly to previous asbestos exposure, and partly due to exposure to either titanium tetrachloride or titanium dioxide or intermediate reaction products in the formation of titanium metal.

Q. Thank you, Doctor.

Doctor, in that study, were you able to -- strike that.

You also undertook education at the Public Health School in 1979 and 1980; is that correct?

A. Are you speaking about the Harvard School of Public Health?

Q. Yes.

A. I was there from 1978 to 1980.

Q. All right. And, Doctor, you've indicated on your curriculum vitae -- this is the section I'm referring to, Doctor -- Public Health School, and you've sectioned off 1979 and 1980 at the Harvard School of Public Health.

What exactly was that two years devoted to in terms of your training?

A. My residency in occupational medicine.

Q. With regard to your residency in occupational medicine, did it cover the topics you've already indicated to us?

A. Yes.

Q. Did it cover any additional topics that you haven't listed yet, that you can think of at this time?

A. As I said before, there were some minor areas,

which I can try to recall. I took a course in tropical diseases, for example, and there were a few others. A course in infectious disease epidemiology; a course -- well, actually that course was properly titled, "Decision-making in Issues of Public Health Importance," and it focused on decision-making in the area of infectious disease epidemiology and control.

I think that covers everything. There are probably a few other small courses that I didn't mention.

Q. That's fine, Doctor. Thank you.

I see that you're licensed to practice in the District of Columbia, Maryland, Massachusetts and California. Is that all correct?

A. Yes.

Q. You have Board certification in Internal Medicine in 1981; is that correct?

A. Yes.

Q. And Preventive Medicine in 1982; is that correct?

A. Yes.

Q. And a subspecialty certification in occupational medicine in 1982; is that correct?

A. Yes.

Q. Are you Board-eligible in any other subspecialties or specialties?

A. No.

Q. Doctor, on page 2 of your curriculum vitae, you have a heading, "Professional Background" and

"Graduate Level Courses." Do you see that?

A. Yes.

Q. The fourth item down deals with "Family and Preventive Medicine, Year 1 Medical School Curriculum, lectures on occupational cancer, heavy metals toxicity," et cetera. Do you see that language?

A. Yes.

Q. Doctor, what exactly did you study with regard to heavy metals toxicity during that one year?

A. During which year are we --

MR. GLICKMAN: I think those are what he teaches, not what he studied. Maybe there's a confusion in your question.

MS. JONES: Thank you, Counselor.

MR. GLICKMAN: Is that right, Doctor?

THE WITNESS: Yes. Those are courses I teach.

Q. BY MS. JONES: So you teach the first year of medical school in that topic; is that correct?

A. I give lectures on those topics to the first-year medical students.

Q. Where did you receive your training with regard to heavy metals toxicity?

A. At the Harvard School of Public Health.

Q. And that was in your occupational health courses and studies?

A. That was in -- specifically in the course in toxicology and a course in basic problems in occupational health.

Q. Have you done studies with regard to heavy metals toxicity other than the one that you've already indicated on titanium?

A. I would not classify titanium as a heavy metal.

Q. Thank you, Doctor.

Have you done studies in heavy metal toxicity?

A. I am in the middle of a study of lead toxicity from lead naphthenate, n-a-p-h-t-h-e-n-a-t-e.

Q. Have you been involved in any other heavy metal toxicity studies other than the one you just mentioned?

A. I did a mortality study of geothermal workers who had low-level exposure to inorganic arsenic.

Q. Doctor, on that same section of your curriculum vitae, again, your teaching responsibilities, items 6 and 7, invited lecturer, School of Public Administration, and the 7th one, the Institute of Safety and Systems Management -- do any of these courses that you teach, the four that I've mentioned -- excuse me -- the three that I've mentioned, involve the study of asbestos-exposed individuals?

A. The fourth item on that list, the year one medical school curriculum, involves teaching the medical students about the health effects of asbestos, under the topic of occupational cancer.

Q. Doctor, other than the study that involved the titanium exposure and the asbestos exposure that we

discussed earlier, have you participated in any other studies that involved individuals exposed to asbestos material?

A. Yes, as a peripheral issue in the mortality study of aircraft manufacturing workers that we've completed, some of the exposures in which we were interested -- or we were interested in asbestos exposure in that study.

Q. Which page are you now referring to, Doctor, on your C.V.?

A. Page 8, item 2 at the top.

Q. Is that paper still in preparation, Doctor?

A. Yes, it is.

Q. What population of workers did you study?

A. A cohort of aircraft manufacturing workers in San Diego.

Q. From a particular plant?

A. From Rohr Industries.

Q. Over what period of time did your study last?

A. The study was conducted between 1980 -- forgive me if I don't remember if it started in '83 or '84.

Q. That's all right.

A. It was either late '83 or early '84, up to the present time. We conducted the study over that period of time. It was a retrospective study which was interested in exposures reaching back really to the start of the company in the 1940s.

Q. During that study, did you identify the

particular materials that contained asbestos used at Rohr Industries?

A. We ascertained which jobs involved the use of asbestos or exposure to asbestos.

Q. In identifying the particular jobs, did you incidentally identify the products that contained asbestos?

A. Do you mean by brand name?

Q. By type of product. In other words, brake material, insulation material.

A. We identified them by type of use.

Q. Doctor, have you participated in any other studies that involved asbestos-exposed individuals?

A. No.

Q. What was the population, that is, the total population that you studied in the second study in San Diego?

A. It was approximately 12,600 people.

Q. Did you study these people by interview or by record?

A. The subjects of the study were studied by record. However, some of the current employees were interviewed to ascertain exposures that had occurred in the past, in the jobs held by the subjects of the study.

Q. So you collected your data for the study from records that had previously been authored by other individuals?

A. Yes.

Q. Would the same be true with regard to your data collection in the first study that you mentioned?

A. Which one are you referring to?

Q. The titanium metal production.

A. Yes.

Can I add something to that?

Q. Certainly.

A. In that study, we abstracted the work records and we also interviewed the workers in the titanium study. So it was a combination of the two.

Q. Thank you, Doctor.

Doctor, on page 3 of your curriculum vitae, if I can find it again, under "Clinical Teaching," you indicate that you've taught at Barlow Hospital; is that correct?

A. Yes.

Q. That was from 1983 to 1986; is that correct?

A. Yes.

Q. And you have also held a teaching position with CAL-OSHA; is that correct?

A. I wouldn't put it in the terms that I've held a teaching position with CAL-OSHA.

Q. I see.

A. I supervise a field placement of our residents with CAL-OSHA.

Q. In other words, medical residents from this University Hospital you place with CAL-OSHA?

A. Yes. I supervise their work and meet regularly with them and a supervisor from CAL-OSHA.

Q. Have you ever worked for CAL-OSHA?
A. No, I have not.
Q. Have you ever worked for National-OSHA?
A. No, I have not.
Q. Have you ever authored or participated in authoring any studies for CAL-OSHA or National-OSHA?
A. Yes, I have.
Q. What studies were those, Doctor?
A. We conducted a study -- or I should say, we with others conducted a study under contract with CAL-OSHA, and that was a study of pulmonary function -- or of respiratory effects of cotton-dust exposure in the cotton garnetting industry.
Q. Any other studies that you have conducted for or in cooperation with CAL-OSHA?
A. I'm currently assisting them on an informal basis in a study of styrene exposure.
Q. Would you term or characterize your assistance as an advisor of some type?
A. Yes.
Q. Doctor, the same questions with regard to National-OSHA. Have you participated in or cooperated with the studies conducted by National-OSHA?
A. No.
Q. Doctor, on page 5 of your curriculum vitae, you listed a category, "Research Activities." I'd like to ask you some questions about that, if I may.
Your major areas of research interest are

occupational cancer, epidemiology, and epidemiology of occupational pulmonary disease; is that correct?

A. Yes.

Q. Doctor, do either of these two general topics, that is, your major areas of interest, involve the study of asbestos-exposed individuals?

A. Insofar as asbestos exposure relates to those general areas, yes, it would.

Q. Have you ever attempted in your research in these two major areas to isolate the effect of asbestos upon individuals that you've studied, that is, isolate it from other industrial effects?

A. In the titanium study that we described earlier, we did attempt to do that, and in the mortality study of aircraft manufacturing workers, we also attempted to determine the effect of asbestos.

Q. Did you publish either of those studies, Doctor?

A. The titanium study is in press. And the aircraft manufacturing study is in preparation.

Q. Is it common to publish interim results of studies in the medical field? In other words, while you're in progress, did you publish any of your data or opinions before you had actually finished the studies?

A. The only situation in which that has occurred is when I've submitted a technical report on a study, and then later tried to publish the results in a medical journal.

Q. With regard to the technical reports, would that be something you would publish if you had received a grant from an organization of some kind and you were keeping them informed of your progress?

A. Yes.

Q. Would there be any other instance in which you would publish such a study in an interim basis?

A. Not to my recollection.

Q. Doctor, under the major areas of studies, the first one being occupational cancer epidemiology, the third category is gastrointestinal cancer and occupational factors. Do you see the language that I'm referring to?

A. Yes.

Q. Doctor, with regard to gastrointestinal cancers, is it common to group cancers of all parts of the gastrointestinal system into one, or are they separated out according to the portion of the system that's affected?

A. I'm not sure I understand the question.

Q. Would you, for instance, attempt to study stomach cancers as distinguished from colon cancers, or would they be combined in the same data?

A. I guess it would depend on what purpose you had for doing the study.

Q. With regard to your areas of interest in this regard, have you undertaken any studies of gastro-intestinal cancer?

A. Yes.

Q. Can you estimate for us the number of studies

that you have undertaken or participated in?

A. Three related to gastrointestinal tract cancer.

Q. Is gastrointestinal tract cancer distinguished from colon cancer?

A. Colon cancer is a subcategory of gastrointestinal tract cancer.

Q. Would those three studies include any work that you have done with regard to colon cancer?

A. Yes.

Q. Doctor, let me ask you, then, about these three studies. Can you tell me what the first study was, that is, what group you studied, for instance?

A. We studied the relationship between job activity and colon cancer risk in Los Angeles County.

Q. What population did you study? Just workers in Los Angeles?

A. We studied approximately 2,950 cases of colon cancer diagnosed among men in Los Angeles County between 1972 and '81, I believe, and used as a comparison population many thousands of people who had other types of cancer.

Q. The comparison was the control group, or is that an incorrect explanation?

A. That's a reasonable way to say it.

Q. And these thousands of other people, then, had other types of cancer, also living in Los Angeles County?

A. Yes.

Q. Did you obtain your data by interview with individual physicians, or by review of records?

A. The data were obtained through the Los Angeles County Cancer Surveillance Program which ascertains virtually all incident cases of cancer in Los Angeles County, and those data are obtained by abstracting pathology records at all of the hospitals in Los Angeles County.

Q. Doctor, to your knowledge, was any of this data abstracted from death certificates?

A. Yes. The Cancer Surveillance Program also ascertains death certificates in Los Angeles County to see whether they have missed any incident cases of cancer, so they surveil mortality due to cancer as well.

Actually -- excuse me -- but for our study, we only used incident cases. I should back up. For our study we did not use death certificate based causes. Those were just incident cases.

Q. Can you explain to me in a little more detail what an incident case is?

A. An incident case is the case at the time it is diagnosed.

Q. Do you know whether the L.A. County Cancer Surveillance Program used pathology reports, for instance, or interviews with doctors? In other words, do you know how they obtained their information?

A. They obtained their information from pathology

reports.

Q. Do you know which hospitals in Los Angeles County participate or contribute to the L.A. County Cancer Surveillance Program?

A. It's my understanding that every hospital in Los Angeles County participates in it.

Q. Do you know what years are reflected, that is, years of diagnosis, are reflected in the documents that you used from the L.A. County Cancer Surveillance Program?

A. The Cancer Surveillance Program began in roughly 1971 or '72, and had incomplete ascertainment for either '70 and '71 or '71 and '72, and has had virtually complete ascertainment of incident cases since then.

So it's roughly from '71 or '72.

Q. And that is the data base that you used, '71 or '72 through '81; is that correct?

A. I believe we terminated in '81. I would have to check to be certain.

Q. All right. Doctor, with regard to this first study that we're talking about, did you determine from the L.A. County Cancer Surveillance Program the occupation of the individuals whose cancer was reported?

A. Yes.

Q. Did you obtain employment information or occupational background from any source other than that?

A. Other than what?

Q. Other than the L.A. County Cancer Surveillance Program data.

A. For that study?

Q. Yes.

A. No.

Q. So the individual's employment and individual's diagnosis -- that information came from the L.A. County Cancer Surveillance Program data; is that correct?

A. Yes.

Q. What other data did you abstract or use from the L.A. County Cancer Surveillance Program?

A. For that project?

Q. Yes.

A. I'm not clear what your question is.

Q. For instance, did you attempt to categorize according to age, sex, height, weight, that sort of thing?

A. We obtained information on sex, race, age, pathologic diagnosis.

We inferred socioeconomic stratum.

As you've stated, we had information on occupation and industry.

Q. With regard to -- excuse me, Doctor. Was there anything else you wanted to add?

A. No.

Q. With regard to occupation and industry, did the material that you reviewed indicate the individual's entire employment history, or the job at the time of diagnosis?

A. It indicated the job stated as the usual job,

and that was stated at the time of diagnosis.

Q. Did you publish the results of this particular study?

A. Yes.

Q. Is that listed on your C.V., Doctor?

A. Yes.

Q. Can you point that out to me, please?

A. On page 7, No. 3, under "Full Length papers."

MS. JONES: Off the record, please.

(A discussion was held off the record.)

MS. JONES: Back on the record, please.

Q. I notice that you, Drs. Peters, Bernstein and Mack participated in the study; is that correct?

A. Yes.

Q. So you co-authored this particular article?

A. Yes.

Q. Did you reach any conclusions as to the result of the study that you published?

A. Yes.

Q. What conclusions did you reach?

A. We found that physical activity on the job was associated with lower colon cancer risk, not sedentary -- or I should say, not lack of physical activity on the job.

Q. Did you direct this particular study to focus on physical activity on the job?

A. Yes, we did.

Q. Did you direct this particular study to focus on any other activity or -- strike that.

Did you direct this activity to focus on any other parameter, in other words, such as dietary habit or type of industry?

A. Could you restate that question for me, please?

Q. Sure. In other words, the study was directed at finding the effects of activity, an individual's physical activity on the job, and that relationship to development of colon cancer; is that correct?

A. It was directed at finding the relationship between physical activity on the job and colon cancer.

Q. Did you attempt in that study, whether or not the results were published, to determine the relationship between colon cancer and any other factor, such as an individual's diet or an individual's industry, particular type of industry?

A. We did not study diet. We did not study industry other than as a means of grouping people according to physical activity.

Q. Did you reach any other conclusions as the result of that study, or maybe "conclusion" is the wrong word. Did you have any other findings as a result of that study?

A. The major finding was the one I've already mentioned.

Q. Sure.

A. And the subsidiary finding to that was that the association between job activity and -- or I should say, job inactivity and colon cancer was not explained by

socioeconomic status or by ethnicity, or by age differences between the cases and the comparison population.

Q. Anything else that you can add to that, Doctor?

A. No.

Q. What is the second study you undertook with regard to G.I. cancers?

A. We did a similar study to the first one of the relationship between exposure to various types of dust and stomach cancer risk.

Q. Was that study directed solely at stomach cancer?

A. Yes, it was.

Q. Did you again obtain your data from the L.A. County Cancer Surveillance Program?

A. Yes, we did.

Q. For what period of time? Was this again the '71 to '81 range?

A. May I look at the study to refresh my memory?

Q. Certainly.

A. 1972 to '82.

Q. The data that you used in the study was taken from that range of years; is that correct?

A. The cases were men who were diagnosed between 1972 and 1982 as having stomach cancer.

Q. That was, again, for males only?

A. Yes.

Q. What factors did you consider in this study? In other words, were you looking at particular types of industry, focusing on particular types of dust?

A. We were looking at types of dust.

Q. What types of dust did you focus on with this study?

A. We categorized dust into broad groups such as metal dusts, organic dusts, mineral dusts.

Q. Did you have any subcategorizations within those three areas? In other words, did you take metal and divide it up between iron and aluminum, or did you just take metal dust in general?

A. We took metal dust in general.

Q. Would the same be true of the general group, organic dust?

A. Yes, except that we made a distinction between smoke and exhaust and other types of organic dusts.

Q. Did you also take mineral dust in general, or did you have any subcategories of that?

A. Mineral dust in general.

Q. In looking at your paper, Doctor, can you tell us what job categories the individuals had whose data you used in this study?

A. It's difficult to give you an answer to that. There were 1,342 cases. Do you want all the jobs held by all the cases?

Q. Let me put it this way to make this shorter. Is there any particular group of job category that you

attempted to study?

A. No. We attempted to study all types of jobs within Los Angeles County and use the jobs to group people according to the type of dust exposure.

Q. Doctor, is asbestos itself a mineral?

A. Yes.

Q. Was asbestos one of the minerals that -- strike that.

In doing this study, was asbestos as a mineral under the category, the general category of minerals?

A. Jobs in which there was exposure to asbestos would have been grouped into the category of jobs in which there was exposure to mineral dust.

Q. Can you tell me what other mineral dust aside from asbestos would have been grouped in that third category?

A. It would have included various dusts such as silica, plaster, various types of stone, cement.

Q. Those would be the major minerals that you --

A. Yes.

Q. -- obtained data on? All right.

Did you attempt in any way to differentiate between any of these types of minerals in the data that you collected?

A. Not -- no.

Q. Doctor, did you reach any conclusions or did you have any findings as a result of this particular study?

A. Yes.

Q. What conclusions or findings did you reach?

A. We found that men who worked in dusty jobs had a risk for developing stomach cancer at least 1.2 times that of unexposed men.

Do you want me to continue?

Q. Yes. Any other findings you had, Doctor?

A. The association of exposure with stomach cancer was stronger at higher levels of dust exposure. The risk was not uniform throughout the stomach. The highest risk was found for the antrum and pylorus. At that site, exposure to mineral dust carried the greatest risk for cancer, which was 2.4 times the risk for unexposed men.

Q. Any other findings or conclusions?

A. The highest risks from dust were observed in blacks.

Q. Any other conclusions or findings, Doctor?

A. Those are the major ones. There are some minor ones, but those are the major ones.

Q. Doctor, are you aware -- strike that. I'll try to keep this in some sort of order.

What was the third study that you did with regard to cancer?

A. The study that we previously mentioned regarding mortality in the aircraft manufacturing industry. That study included a case-control study of esophagus cancer.

Q. Let me back up, Doctor. With regard to the

second study, was that one also published?

A. That one has been submitted for publication.

Q. Is it listed on your curriculum vitae?

A. Yes. On page 7.

Q. Page 7?

A. Under "Papers Submitted," it's No. 1.

Q. Thank you.

"Adenocarcinoma of the stomach and exposure to occupational particulates"?

A. Yes.

Q. Doctor, would it be possible for us to obtain from you a copy of that paper since it is not yet published?

A. I don't know what the protocol is for that.

Q. The protocol is just to ask for it and we attach it to the deposition transcript.

MR. GLICKMAN: No, that's not necessarily true. The doctor may not want an unpublished article that may still be revised in your hands or anybody else's hands. It's his private affairs and it's going to stay that way until the judge rules otherwise.

THE WITNESS: That is work in progress, and there are other people involved with it, and I would not feel right about giving that to you without their permission.

MR. GLICKMAN: You get a court order and we'll talk about it, and I'll be there to resist it.

Q. BY MS. JONES: Let me put it this way. This particular article is the one that you were referring to in responding to certain questions during the deposition;

is that correct?

MR. GLICKMAN: Only because you were asking the questions.

Q. BY MS. JONES: In other words, the paper that you were referring to is the unpublished article that you've identified at page 7, No. 1, of your curriculum vitae?

A. Yes.

MS. JONES: Counsel, are you still going to instruct your expert not to produce that item?

MR. GLICKMAN: Sure. It's not even all his work product. He just told you there's other people involved and he'd have to get their consent. It's work in progress. I don't think it has anything to do with the issues in this case. You're just on a fishing expedition, and engaging in a sea of trivia as opposed to concentrating on the issues in this case, and without a court order, he's not going to turn it over to you, and that's the way it's going to be. Go on to the next question.

Q. BY MS. JONES: Doctor, what I'm going to do is request the court to obtain that document from you. Can you tell me who the other contributors to this particular paper are, or are they listed here?

A. They are listed there.

Q. Again, that would be Wright, Bernstein, Peters, Garabrant and Mack; is that correct?

A. Yes.

Q. And are all of these individuals doctors?

A. They all have doctoral degrees.

Q. Either medical or Ph.D.'s of some type?

A. Yes.

Q. Are they all located at this institution, USC?

A. No.

Q. Can you tell me where Dr. Wright is located?

A. In Washington, D.C.

Q. And Dr. Bernstein?

A. Here at USC.

Q. And Dr. Peters?

A. Here at USC.

Q. And Dr. Garabrant is here. Dr. Mack?

A. Here at USC.

Q. I'm sorry. Did you say Wright was at Washington, D.C.?

A. Yes. Well, he lives in McLean, Virginia.

Q. Thank you, Doctor.

MR. GLICKMAN: I'll give you fair notice under Article 1, Section 1 of the California Constitution, invasion of privacy, and the consumer --

MS. JONES: Counsel --

MR. GLICKMAN: I'm putting this on the record. You said you're going to make a motion, and I think you're trying to intimidate my witness.

MS. JONES: We have a two o'clock appearance --

MR. GLICKMAN: And I just want to say you're going to have to give all those doctors written notice of any

motion you're going to apply for.

MS. JONES: Counsel, we've a two o'clock appearance and you can give the doctor any advice you want, but I think we ought to try to finish this as quickly as we can.

MR. GLICKMAN: I think you're trying to intimidate him.

Q. BY MS. JONES: Doctor, with regard to the third study you did with regard to G.I. cancers, let me ask you some questions with regard to that now.

That was the study you referred to earlier at Rohr Aircraft Industries in San Diego; is that correct?

A. At Rohr Industries.

Q. Rohr Industries. Thank you.

That study was directed at mortality, and as a subtitle, so to speak, the study of cancer of the esophagus?

A. It was a mortality study of aircraft manufacturing employees, with a nested case control study within it, and that was a case control study of esophagus cancer.

Q. Doctor, with regard to this particular study, you said that you obtained your data, if I recall correctly, from interviews and also from records; is that correct?

A. We obtained the work records of cases and controls in the study, and we ascertained the exposures that occurred in those jobs by interviewing current workers who had been present in those areas of the plant at the time the subjects of the study held the jobs.

Q. So these would have been co-workers of the

individuals?

A. Of the subjects, yes.

Q. Did you obtain your data from any other source for this particular study?

A. Yes. We -- let me back up. Are you asking about the overall mortality study, or the case control study of esophagus cancer specifically?

Q. Thank you, Doctor. The case control study of esophagus cancer.

A. We ascertained the vital status of each of the cases and controls, and the cause of death for those who were dead by standard tracing techniques, which involved use of Department of Motor Vehicle records, Social Security Administration records, State of California death tapes, and credit records from TRW.

Q. Has this particular study been published?

A. No.

Q. Has it been submitted?

A. No.

Q. Which physicians or Ph.D.'s participated in this study along with you?

A. Leslie Bernstein, and Brian Langholz.

Q. Are you referring to a particular item on your curriculum vitae?

A. Yes, I am.

Q. Which item is that, Doctor?

A. Page 8, under "Papers in Preparation," No. 2.

Q. Thank you, Doctor.

Q. Have you reached a final finding or conclusion with regard to this particular study?

A. The study has to be reviewed and accepted by an advisory committee before I can say the results are final.

Q. Do you personally have any opinion with regard to the findings and conclusions based upon your review of the data collected in the study?

A. Could you say that again, please?

Q. Yes. Based upon your review of the data in the study, do you have any personal opinions with regard to the findings and conclusions?

A. Yes.

Q. What are those?

A. The goal of the study was to ascertain whether there were factors at Rohr Industries that were associated with esophagus cancer.

We found that there were some associations that, although they were statistically significant, appeared not to be causal because they did not show a relationship between increasing risk and duration of work in the areas where there was exposure or between risk and time since first employment in the areas or in those exposures.

There was one finding that was quite strong which showed an association between esophagus cancer and work in a particular building. Actually, it was an area that included two buildings.

Q. What particular work, if you recall, was being

done in those two areas?

A. A variety of things were being done. That area included a large amount of office space where accounting and other administrative tasks were done.

It included an engineering design area which was primarily used for tooling design.

It included a tooling shop where tools were built, and it included a maintenance area.

Q. Within those four subcategories of activity in those two buildings, were you able to find any strong link between the development of cancer of the esophagus and any one of those occupational areas?

A. The strongest link appeared to be between work in the office areas and esophagus cancer. Both office areas.

Q. Thank you, Doctor.

Are there any other studies that you've done or participated in with regard to G.I. cancer?

A. I guess to be complete, I would have to say that a portion of the mortality study of shoe and leather workers in Massachusetts that I did also looked at cancer mortality due to gastrointestinal cancers.

Q. Any particular gastrointestinal cancer?

A. It would have looked at all different types.

Q. Which document or portion of your C.V. are you referring to, Doctor?

A. On page 7, under "Full Length Papers," No. 5.

Q. What findings did you reach in that particular

study?

A. I would have to look.

Q. If you have it, you can refresh your memory, Doctor.

A. The major findings were that there was a statistically significant excess of bladder cancer among female shoe workers, and a case referent analysis of leather workers demonstrated an association of lung cancer with work in leather tanning jobs.

Q. You said a case --

A. Referent.

Q. Were there any other findings with regard to that particular study, Doctor?

A. Those were the major findings.

Q. Thank you.

Doctor, with regard to any of these four studies, can you, from the data that you've collected and the findings you've made as a result of that data, draw any conclusions with regard to the likelihood of an individual developing cancer of the colon?

MR. GLICKMAN: In any individual, regardless of workplace, regardless of any exposure levels?

Q. BY MS. JONES: I'm talking, Doctor, about the populations that you studied in those four studies.

Did the data that you collected allow you to draw any conclusions or to reach an opinion with regard to the likelihood of an individual developing colon cancer?

A. I don't know how to interpret that question.

Q. What I'm trying to find out, Doctor, is whether or not there was any data that was specific enough for you to make a finding or to have an opinion -- and I'm again speaking only about the individuals that you studied in those four studies -- of the likelihood that they would develop a particular type of cancer, that is, colon cancer.

A. The study I described of colon cancer identified a risk factor for colon cancer which would influence an individual's risk of developing colon cancer.

Q. You're referring to the first study that we discussed, where you obtained the data from the L.A. County Cancer Surveillance Program?

A. I'm referring to the study of job activity and colon cancer risk. I believe that was the first study.

Q. The physical activity on the job, the relationship of that?

A. Yes.

Q. All right. With regard to that particular study, is it correct that the data you collected was directed only at the physical activity on the job rather than other factors such as exposure to dusts or to minerals or dietary habits or something else?

A. It was directed at the effect of physical activity and other factors such as age, sex, ethnicity, social class.

Q. Were any of the other factors -- just to be

sure I'm certain I understand you, did any of the other factors include industrial exposures, such as to dust or chemicals, something like that?

A. To chemicals or mixtures of chemicals, no.

Q. To dusts of any kind?

A. No.

Q. Doctor, have you -- strike that. Let me back up just a minute.

Is it correct that your principal emphasis in your work now is with regard to epidemiology?

A. Yes.

Q. Are there any other areas of work or study that you are interested in and actively participate in at this time?

A. There are areas of study, meaning formal or informal reading and developing skills. My research is focused on occupational cancer epidemiology.

Q. Do you, for instance, see patients privately?

A. Yes, I do.

Q. Do you work for any particular governmental agency of any kind?

A. Not under any formal arrangement.

Q. Do you act as an expert advisor to attorneys for legal matters?

A. I have done a small amount of that.

Q. Can you tell me what amount of your work activity is directed to advising attorneys in your capacity as an expert?

MR. GLICKMAN: You mean like a percentage?

MS. JONES: Yes.

THE WITNESS: Over what period of time?

Q. BY MS. JONES: Well, if the last year is convenient, or the last five years, whatever is most convenient for you, Doctor.

A. Over the last five years, I would say it's probably been well under one percent.

Q. Have you noticed an increase or a decrease in that figure during the last year?

A. Yes, an increase.

Q. During the last year, can you tell us approximately what percentage of your time is spent in that capacity?

A. I'd guess on the order of maybe two percent of my time.

Q. Thank you, Doctor.

With regard to this particular activity, do you know whether the attorneys that you're advising are what are called plaintiff counsel or defense counsel?

A. I have advised both.

Q. Can you tell us what amount or percentage of your time is spent directly with patients?

A. During the past year?

Q. The last year, the last five years, whatever period is easiest for you.

A. Well, it's fluctuated. During the past year, I'd say it's less than ten percent. I'd say ten percent is

a reasonable number.

Q. Are these patients individuals who are under treatment for some type of cancer?

A. A few have been.

Q. Is there any other part of the body that you emphasize in terms of the patients that you treat, such as pulmonary problems, heart problems, that sort of thing?

A. Most of the patient contact I have is in screening programs, and usually they receive a complete physical examination.

Q. What screening programs are you referring to, Doctor?

A. I run a medical screening program for the USC employees who handle carcinogens in their work, and I run a screening program for foundry workers who are exposed to inorganic lead.

Q. You said "inorganic lead"?

A. Yes.

Q. Which foundry, Doctor?

A. Camsco.

Q. What carcinogens are handled by the USC employees that you examine?

A. Asbestos, benzene -- can I look?

Q. Sure.

A. Radionuclides, arsenic, aromatic amines, a-m-i-n-e-s --

MR. GLICKMAN: How long a list are you going to read?

THE WITNESS: Not very long.

Methylcholanthrene, methyl N-nitrosoguanidine, gallium arsenide, aziridine, a-z-i-r-i-d-i-n-e, nickel carbonyl, acrylonitrile, chloromethylmethylether, dimethyl sulfate, arsine, a-r-s-i-n-e, chromates.

Q. BY MS. JONES: Thank you, Doctor.

The data received in this screening program, is it published within the university?

A. No.

Q. Is it reported to any particular department of the university?

A. Not formally. I will be giving an annual summary to the industrial hygienists for the university. I have not done that yet.

Q. How long have you been involved in this screening program?

A. I assumed responsibility for that program in, I guess, March.

Q. March of 1986?

A. Yes, although I participated in setting it up, oh, three years ago.

Q. The individual patients that you see, are they from any other source or for any other reason?

A. I have seen a small number of patients who were referred by lawyers.

Q. With what types of problems did these patients present?

A. A variety. Different types of cancer,

respiratory disease, skin problems.

I should include under that heading I've also received some referrals from insurance companies that insure companies for Workers' Compensation.

Q. Do you have any other work activities other than the ones that you've mentioned so far?

A. Those are my major activities, and the teaching which we --

Q. We talked about.

A. -- discussed briefly.

Q. All right. Thank you.

Doctor, as an epidemiologist, you read various journals; is that correct?

A. I read various journals, yes.

Q. Are there any particular journals that you subscribe to?

A. I personally subscribe to?

Q. Yes.

A. I subscribe to the "Journal of Occupational Medicine," and I think I get the "American Journal of Preventive Medicine."

Q. Are there any other journals that you routinely read?

A. Yes.

Q. What would they be?

A. The "British Journal of Industrial Medicine," "Cancer Research," "Journal of the National Cancer Institute," "Scandinavian Journal of Work Environment and

Health," "Environmental Perspectives," "American Review of Respiratory Disease," "Science," "New England Journal of Medicine," "Lancet," "American Journal of Industrial Medicine."

MR. GLICKMAN: Can we stop there, or do you want him to keep going on?

MS. JONES: We can. If he can see around the reporter, he can keep going.

MR. GLICKMAN: Or his memory.

Q. BY MS. JONES: Those are principally the journals that you would read on a routine basis?

A. Those are the journals that come across my desk and I review what is in them and read what is of interest to me.

Q. Doctor, with regard to what is of interest to you, what would that be? In other words, do you spend particular time looking for articles that deal with cancer?

A. I am particularly interested in studies of cancer in relation to environmental agents, and within that, particularly related to occupation.

I am particularly interested in digestive tract cancer. I am particularly interested in tumors of the central nervous system.

I am particularly interested in epidemiologic methods. I am particularly interested in cancer screening and biological monitoring.

I'm interested in neurotoxicology, and in hepatotoxicity.

Q. Thank you, Doctor.

Doctor, with regard to the matter that brings us here today, I'd like to ask you a few specific questions. You're familiar with the case of Carl Bradley?

A. I have read some physicians' notes about Mr. Bradley.

Q. Can you tell me what documents were provided to you to review in evaluating the case of Carl Bradley?

MR. GLICKMAN: How are you holding up? Do you want to take a break for five minutes?

THE WITNESS: No, I'm fine.

MR. CASSELMAN: Well, you may be --

MR. GLICKMAN: Why don't we take a five-minute break. We've been going an hour and a half.

MS. JONES: You're saying the three of you are tired. Okay. We'll go off the record for five minutes.

(A discussion was held off the record.)

(A brief recess was taken.)

MS. JONES: Back on the record.

Q. Doctor, we're back from what was to have been a short break. I want to remind you that you're still under oath. Do you understand that?

A. Yes.

Q. Doctor, when we left, I was asking you about the documents that you reviewed with regard to the Carl Bradley case.

MR. GLICKMAN: All the documents you want to know?

MS. JONES: Yes.

Q. Can you tell me what documents you've reviewed in this matter?

A. Okay. Do you want correspondence from Mr. Glickman that is only procedural and dates and times and things?

Q. Just tell me that it was correspondence from him, and that's all I need to know.

A. Okay. Correspondence, October 3rd, October 2nd --

Q. Doctor, was the October 2nd -- I notice it's a thicker piece of paper. Is there anything of substance in there with regard --

MR. GLICKMAN: It's his subpoena for trial.

Q. BY MS. JONES: -- with regard to medical condition or factors that you would consider in evaluating the case?

A. No.

Q. Okay. Go on, please.

A. Another letter of September 9, 1986.

Q. Anything in there with regard to the factors that you considered in evaluating this case?

A. No.

A letter of April 25, that did not contain any information on factors relating to the case.

Q. Okay.

A. I have a letter --

Q. Before you start, Doctor, the remainder of the documents before you contain information that you considered in evaluating the case?

A. Yes.

Q. Would you identify those, or if you hand them to me, I'll identify them for the record.

The first is letterhead stationery, University of Southern California, dated July 4, 1986, to David Glickman from Kaye Kilburn, indicating no evidence of pleural thickening or plaques, despite Dr. Schoen's interpretation.

I'll go back and ask you specific questions about each of them as we go through.

The next one is August 10, 1981, letterhead stationery of Herman Schoen, to Robert B-u-c-h, regarding Carl Bradley, and it is seven pages, and signature by Herman Schoen.

The next is letterhead stationery, Ira Monosson, M-o-n-o-s-s-o-n, M.D., November 29, 1982, to David Glickman regarding Carl Bradley, deceased, and it is eight pages, signed by Ira Monosson.

The next is March 17, '83, on letterhead stationery of Ira Monosson, two pages, to David Glickman regarding Carl Bradley, signed by Dr. Monosson.

And the next one is letterhead stationery of Samuel J. Sills, August 24, '81, to Miller & Folse, F-o-l-s-e, regarding Carl Bradley in the Workers Comp case. It is a document of 16 pages, signed by Samuel Sills.

Were there any other documents you received in the evaluation of the Carl Bradley case?

MR. GLICKMAN: That's what he received. Do you mean that's what he reviewed?

Q. BY MS. JONES: Anything else you received -- let me be specific. Anything else you received from plaintiff's counsel?

A. There are duplicates of these documents, but there are no other documents.

Q. Did you obtain any other documents from any other source in evaluating this case such as medical records?

A. I did not obtain any documents about Mr. Bradley himself other than these.

Q. Did you review any articles or studies to assist you in your evaluation of the Carl Bradley case?

A. Yes, I did.

Q. What exactly did you review?

A. Can I put these away?

Q. Leave them out, Doctor. I'll need to ask you some questions about them.

A. All right.

Q. All right, Doctor. Which articles?

A. This is a single article.

Q. Thank you.

A. I reviewed sections of that.

Q. Entitled "Toxicology and Carcinogenesis Studies of Chrysotile Asbestos (CAS No. 12001-29-5)(Feed Studies)" and this is in F344/N Rats, and this is by U.S. Department of Health and Human Services, Public Health Service, National Institute of Health, Technical Report Series No. 295 from the National Toxicology Program, dated on the binder November 1985.

Did you review anything else, Doctor?

Thank you.

A. Yes.

Q. That's all right.

Entitled "IARC Monographs" on the evaluation of the carcinogenic risk of chemicals to humans, on the front dated October 1982 from the World Health Organization International Agency for Research on Cancer. This is actually supplement for "Chemicals in Industry Associated with Human Behavior," Volumes 1 to 29.

Thank you, Doctor.

The next one is by Richard Doll, D-o-l-l, and Julian Peto, P-e-t-o, entitled, "Asbestos, Effects on Health of Exposure to Asbestos." I'm looking for a date on this. The copyright is 1985.

Doctor, before we go any further, with regard to this particular document that I've just described, the third one, can you tell me if there were any portions of that document that you reviewed, or did you review the entire document?

A. There were portions of it that I reviewed.

Q. Are you able to remember or did you mark the portions that you reviewed in that document?

A. I am able to remember.

Q. Can you tell us which portions of that document you reviewed?

A. If you would like it by the table of contents --

Q. That's fine.

A. -- I reviewed Section 1, which is the "Origin and Purpose of the report."

Section 2, "Medical Effects of Asbestos."

Section 3, "Types of Cancer Produced."

And parts of Section 4 titled "Difficulties in Assessing Quantitative Effects of Asbestos."

Parts of Section 5 titled "Dose Response Relationships."

And parts of Section 7 titled "Summary."

Q. Thank you, Doctor.

With regard to the second article that I described, the "IARC Monographs," did you review that entire document or only portions of it?

A. Portions.

Q. What portions did you review?

A. There's a section on asbestos, which is on pages 52 and 53.

Q. Thank you, Doctor.

And on the first document that I identified, did you review the entire document or portions of it?

MR. GLICKMAN: The study on rats you're talking about?

THE WITNESS: Portions.

Q. BY MS. JONES: Can you tell me what portions you reviewed?

A. Yes. I reviewed the abstract. I reviewed the summary of peer review comments. I reviewed the introduction. I reviewed parts of section 3 titled "Results."

And I reviewed Section 4, "Discussion and Conclusions."

Q. Thank you, Doctor.

And I see you also have before you some documents that are Xeroxed pages; is that correct?

A. Yes.

Q. Did you also review these in formulating your opinion?

A. I reviewed some of them, yes.

Q. Can you pick out for me the ones that you reviewed with regard to your evaluation of the Carl Bradley case?

A. Yes.

These are the documents I reviewed.

Q. All right, Doctor. Let me just identify each of these for the record.

The first one is from the "Lancet," November 20, 1982, "Asbestos Exposure and Lymphomas of the Gastro-intestinal Tract and Oral Cavity," pages 1117, 1118, 1119 and 1120; is that correct?

A. This is not part of that article.

Q. Thank you. Page 1117 is not part of the article. That's peculiar.

MR. GLICKMAN: It's just the back of page 1118. That's why the doctor put an "X" through it.

Q. BY MS. JONES: I assume page 1120 would not be included in that article as well; is that correct?

A. I believe some of the references --

Q. Are at the bottom of the page. Okay.

A. -- are at the bottom of the page.

Q. Otherwise, the text would not be included in the article; is that correct?

A. Yes.

Q. The next article is -- what publication is this, Doctor?

A. "Mayo Clinic Proceedings."

Q. I see. "Mayo Clinic Proceedings," 52: 809-812, 1977, entitled "Brief Note, Penetration of the Small Intestinal Mucosa by Asbestos Fibers," by Storeygard and Brown, M.D., S-t-o-r-e-y-g-a-r-d.

The next document is entitled "Occupational Related Risks for Colorectal Cancer" by Spiegelman, S-p-i-e-g-e-l-m-a-n, and Wegman, W-e-g-m-a-n, B.A. and M.D.

Doctor, is this published in any available publication?

A. Yes.

Q. What publication is that?

A. "Journal of the National Cancer Institute."

Q. Do you know when it was published?

A. In 1985.

Q. I see your reference here. Thank you, Doctor.

A. I don't have the exact citation.

Q. That's all right.

The next document is from the "British Journal of Industrial Medicine" 1982, Volume 39, pages 368 to 374, entitled "Dust Exposure and Mortality in an American Factory Using Chrysotile, Amosite and Crocidolite in Mainly

Textile Manufacture."

The next is a "Journal of the American Medical Association," JAMA, April 6, 1964, entitled "Asbestos Exposure and Neoplasia," pages 22 through 26.

The next is entitled "Mortality Experience of Insulation Workers in the United States and Canada," 1943-1976, by Irving J. Selikoff, published in the Annals New York Academy of Science, pages 91 -- I'll just flip to the last page here -- 91 through 116.

Next is published in the "British Journal of Industrial Medicine," 1984, Volume 41, pages 151 to 157, "Dust Exposure and Mortality in an American Chrysotile Asbestos Friction Products Plant," pages 151 to 157.

Next is "British Journal of Industrial Medicine," 1983, Volume 40, pages 361 to 367, entitled "Dust Exposure and Mortality in an American Chrysotile Textile Plant," pages 361 through 367.

And the last article is "British Journal of Industrial Medicine," 1980, Volume 37, pages 11 to 24, entitled "Dust Exposure and Mortality in Chrysotile Mining 1910-75."

Let me see if I can put these back in the order you gave them to me, Doctor.

Can you tell me with regard to the fourth item that I have identified, did you review the entire article as I've cited it?

A. Which is the fourth article?

Q. They're in order again, Doctor.

A. Yes, I did.

Q. With regard to the Xerox pages that I have identified and the various articles that they represent, did you review the entire articles of each of them or just portions of that article?

A. Shall I go through each one?

Q. Just flip through. If there are any that you did not review in their entirety, stop and tell me.

A. Completely?

Q. Right.

A. This one I skimmed.

Q. That's No. 5.

A. No. 6, I skimmed, but I am familiar with it from the past, so I knew what I was looking for.

Q. Okay.

A. This one, No. 7, I read completely.

No. 8, I read.

No. 9, I had read in the past, and I refreshed my memory on that.

No. 10, I skimmed, looking for specific elements.

No. 11, I skimmed, looking for specific elements.

And No. 12, I read completely.

MS. JONES: For the record, I'll just attach these by identification only.

Q. Doctor, if I have any difficulty locating those articles, would it be possible for me to obtain a copy of them from your office?

A. Be happy to.

MR. GLICKMAN: If you make the appropriate arrangements to come in and microfilm them.

MS. JONES: No. I mean these copies, photocopies.

MR. GLICKMAN: Well, send a photocopy service down.

MS. JONES: What I'm talking about is maybe two or three pages. I don't think we would need a photocopy service for that. If I needed to copy all of them, I'd make arrangements for someone to come in and do that. But I'm sure most of these we have available in our library.

(Transcript continues on page 58.)

Q BY MS. JONES: Doctor, with regard to each of these articles, did you after receiving the request to review the Carl Bradley file research the available material that you felt was relevant? To identify material that you felt was relevant. Excuse me.

A I'm not sure I understand that question.

Q After receiving the request to review and give your opinion on the Carl Bradley case, did you at that time review the medical literature to determine what articles would be relevant in this particular instance?

A Yes.

Q In other words, you went out and did some research, in other words, and looked through the available journals?

A Yes.

Q With regard to the articles that we've identified, had you on any previous occasion read any of those articles?

A Some of them, yes.

Q Can you tell me which of them were new to you upon your evaluation of the Carl Bradley case.

A Do you want to include these, as well?

Q Yes. Start with this as No. 1.

A That I had looked at previously.

Q Okay. That's No. 1.

A That I had looked at many times previously.

Q That's No. 2.

A This was new to me.

Q No. 3 was new. Okay.

And back on the copy of the articles starting with No. 4 on top.

A This I had seen.

This I had seen.

This I had seen.

Q 4, 5 and 6.

A This was new.

Q No. 7 was new to you?

A This I had seen.

Q Excuse me. Let me just turn that sideways. Go ahead.

A This I had seen.

This was new.

Q Okay. No. 10.

A This was new.

Q 11.

A And this was new.

Q Okay. 12.

The articles then that were new to you just briefly, "British Journal of Industrial Medicine," 1980, Volume 37, Pages 11 to 24.

"British Journal of Industrial Medicine," 1983, Volume 40, Pages 361 to 367.

"British Journal of Industrial Medicine," 1984, Volume 41, 151 to 157.

And the "British Journal of Industrial Medicine," 1982, 368 to 374.

Thank you, Doctor.

Doctor, was there anything else, any documents or tapes or video tapes or audio tapes or anything else that you reviewed in evaluating the Carl Bradley case?

A I can't -- no, I don't think there is.

Q Did you receive any information by interviewing individuals or discussing, obtaining orally, in other words, information from anyone?

A I had a discussion with Mr. Glickman. My recollection is that I did not receive any information that was different than what I had read in the documents we've already gone through.

Q Again, Doctor, just to be sure I'm clear, did you at any time review the medical records on Carl Bradley, that is, medical records generated by any hospitals he was treated at or any physicians who treated him?

A I reviewed the medical records that we have already looked at.

Q These are the correspondence on letterhead stationery that I identified earlier; is that correct?

A Yes.

Q So these documents before us now and which we've identified for the record are everything that you've reviewed in terms of documents for this case?

A To the best of my recollection.

Q Okay. Good.

Doctor, after reviewing all of these records, were you asked to formulate or to express an opinion regarding --

strike that. Let me lay a little foundation.

Are you aware from reviewing the records that Mr. Carl Bradley had a carcinoma of the colon?

A Yes, I am.

Q Are you aware of the location in the colon of that carcinoma?

A I believe it was in the cecum, although the record of Dr. Schoen at one point indicates it's in the descending colon, but most of the other notes say cecum, so I believe that's where it was.

Q Did you assume then that it was located in the cecum for the purposes of your evaluation of the case?

A Yes.

Q You're also aware that he developed metastatic carcinoma in other organs of the body?

A Yes.

Q Doctor, were you asked at any time to formulate an opinion regarding the cause of Mr. Bradley's carcinoma?

A I think so, yes.

Q Do you have an opinion in that regard?

A Yes.

Q What is that opinion?

A That his exposure to asbestos had a causative role in his carcinoma of the colon.

Q What do you mean by "causative role," Doctor?

A That it was a cause.

Q Was it the only cause, in your opinion?

A I'm not sure what terminology you use in the

area of causation.

Q Let's use yours, and you can define it for me.

A Certainly age is a cause, as it is for all cancers, that there is a risk that changes with age for most cancers; such as cancer of the colon, the risk increases with age, so that certainly played a role.

Q Anything else, Doctor? So far you've identified asbestos and age as possible causes, or causes --

A As causes.

Q -- as causes of the carcinoma which Mr. Bradley developed. Are there any other causes, in your opinion?

A There are no other causes that raised his risk above that of males of his sex -- that raised his risk above that of people of his sex, race and socioeconomic status.

What I'm implying there is that those factors also play a role in colon cancer risk.

Q Just to be sure I'm clear, are there any other causes of Mr. Bradley's cancer other than the age and the asbestos?

A There are none that I am aware of, based on the records I've reviewed.

Q Doctor, in reviewing this case, did you request copies of Mr. Bradley's employment records?

A No, I did not.

Q Were you told anything about his industrial exposures at his place of employment?

A I read about them in the notes we have already discussed.

Q Are there any chemicals or toxins that are mentioned in any of those records in addition to asbestos?

A There are a number of chemicals that are mentioned. Specifically I remember in Dr. Schoen's note and Dr. Monosson's notes.

Q In your opinion, would any of those toxins contribute to colon cancer or cause colon cancer?

A I know of no evidence that would link any of those other materials to colon cancer.

Q You said it was in Dr. Schoen's report and --

A Dr. Monosson's.

Q Thank you.

Doctor, what is your understanding of Mr. Bradley's exposure to asbestos?

A In terms of what?

Q In other words, you have identified age and asbestos as causes of cancer in Mr. Bradley. Am I correct?

A Uh-huh.

Q Is that a "Yes"?

A Yes. Excuse me.

Q That's all right.

With regard to asbestos in particular, what do you know of his exposure to that material?

A Okay. Based on the notes -- the medical reports I have read, Mr. Bradley was exposed to asbestos while working for Standard Brands Paint Company between

approximately 1968 and 1972, and there's some difference in those dates, depending on which note I read.

Q Do you know the level of exposure that he had between the years '68 and '72?

A I only know that from the numbers that are cited in Dr. Monosson's note in which he cites measurements of exposure made some years after Mr. Bradley was exposed.

Q Do you recall what figures Dr. Monosson cited?

A May I look?

Q Certainly.

A To generalize, essentially, they were under two fibers per cc.

Q Two fibers identified as asbestos or two fibers of any material?

A My reading of this is that those were asbestos -- these were airborne fiber counts. I do not know if those were -- I'm sorry. Here it is stated. Airborne concentrations of asbestos. I believe that this note implies that all these measurements were of asbestos fibers.

Q Doctor, did you assume in evaluating the case that the fiber concentration between 1968 and 1972 is the same as that reported by Dr. Monosson?

A No.

Q Do you know when the fiber count was taken that Dr. Monosson reports?

A Dr. Monosson cites measurements made in May 1976, March 1977, February 1978.

Q Do you have any work experience yourself, that is, in your work as an epidemiologist, with Standard Brands?

A No.

Q Do you have any work experience with a company similar to that, that is, one that manufactures paint products?

A No.

Q Doctor, do you have any knowledge as to whether or not Mr. Bradley used any type of breathing protection during his employment at Standard Brands?

A I read that he used at some times a paper mask.

Q Do you know at what times he used the paper mask?

A I do not think that that was clear. I had the impression that it was intermittent during the times he handled asbestos.

I don't recall the exact dates, if they were specified. I believe they were not specified, though.

Q Do you know anything about the particular asbestos material that Mr. Bradley was exposed to at that work location?

A I do not, other than that it was a pelletized form of asbestos, which from what I read was supplied by Union Carbide. I do not know what mineralogic form of asbestos it was.

Q You said "pellet," "pelletized"?

A Yes. And that was what he handled and

generated an aerosol exposure.

Q Do you know anything about the actual procedure Mr. Bradley used when handling the pellets from Union Carbide?

A I read that he dumped bags of those pellets into a mixture, and then added a large quantity of water and other ingredients and mixed the paint.

Q Do you know anything else in particular about Mr. Bradley's work with the pellets at Standard Brands?

A I read that he mixed two batches of paint each day, and that he put 16 bags of pellets into the mixer for each batch.

Q Is it your understanding that he introduced the pellets into a container, and then added water onto the pellets?

A That was my impression.

Q Doctor, do you have any knowledge as to any other products that Mr. Bradley used that contained asbestos other than the pellets that you've referred to?

A I do not.

Q Do you have any knowledge of any other products that contained asbestos that were used at that plant while Mr. Bradley was employed there?

A I do not.

Q Doctor, is it your opinion that an individual who inhales air that contains less than two fibers per cc of airborne asbestos is at an increased risk of developing medical problems from that exposure?

MR. GLICKMAN: You're assuming that's what Mr. Bradley inhaled, or are you just asking the general population, because those studies were done under later time conditions when Bradley was not intensively mixing the pellets. I just want to get what your question is.

MS. JONES: We have the dates down.

Q What I'm asking for is do you have an opinion as to whether or not an individual exposed to less than two fibers per cc of airborne asbestos will develop medical problems from that exposure?

A It's my opinion that exposures at that level are associated with an increased risk of lung cancer, and of mesothelioma.

Q Any other illnesses, Doctor?

A It would depend on the duration of the exposure. I should have said that even for those two, how high the risk would be for those two diseases.

Q Is it correct, then, the longer the duration of exposure, the greater the increased risk of lung cancer and mesothelioma?

A I believe so.

Q Doctor, can you tell me, is this based on your own studies or studies you have read in journals?

A That is based on studies I have read in journals.

Q Can you tell me which studies in particular? If you can recall any of them, Doctor.

A Can I go to my files?

Q Sure.

A Let me set some things aside. These are the documents --

Q Stick those papers over here, if you will, because I'll be asking you some questions about them.

A Well, I'll start over here.

Okay. It would be 4 in this textbook.

Q "Occupational Lung Disorders," by W. Raymond Parkes, P-a-r-k-e-s, Second Edition, at page what, Doctor, or just generally throughout the text?

A There are scattered sections on asbestos and its health consequences.

Q Doctor, can you think of any particular authors that come to mind with regard to responding to that question, that is, what articles or material you've reviewed on which you base your opinion? Last opinion. Excuse me.

A I can think of a teaching material put together by the American College of Radiology that presents a very nice concise review of that.

This is an article by Herbert Sideman, published in "Prevention and Detection of Cancer," Part 1, Volume 1, H. E. Neibers, Editor.

Q Is that S-i-d-e-m-a-n?

A Yes. Marcelle Decker, Incorporated, New York, 1977.

Q Are there any authors in particular, Doctor, that you rely upon in formulating your opinion that there's

increased risk of developing lung cancer, mesothelioma, from exposure to asbestos at that level?

A I will have to look.

Q Okay.

MR. GLICKMAN: I think the record should show that the doctor has pulled out a file drawer full of materials, loose-leaf in nature. It must be six to eight inches thick. Do you want him to look through all that stuff, Counsel?

MS. JONES: I just want an idea of what he's relying on. I'm sure he's reviewed tons of material. I don't want to know everything he's ever read, certainly.

MR. GLICKMAN: Like Dr. Selikoff's book or something like that?

Q BY MS. JONES: Doctor, you mentioned earlier an article or publication that was a compilation of various articles. Would the various authors that you are looking for in the material before you be included in that particular publication, teaching material?

A I would have to look at it.

Q Okay. Can you tell me, again, the name of that teaching material and where I might locate a copy of it.

A Yes, if I can find it. It's in another file. It's in a teaching file.

Q Is that a dry hole, Doctor?

A No, no. I'm going to have to pull the articles that it refers to. It says, "MacDonald, et al., Nearly

Linear Dose Response Relationship Between Lung Cancer and Cumulative Asbestos Exposure."

Neither study demonstrated a threshold dose below which there is no risk.

Q Can you just give me the citation for each of those articles?

A I don't have that. Dement, et al., demonstrated approximately a twofold excess risk of lung cancer among chrysotile textile workers after cumulative exposures of 27 fiber years.

Q What is a fiber year, Doctor?

A It is a year at one fiber per cc.

Q And they're indicating there's an increased risk after 27 fiber years?

A Correct. And that study -- there's two references under the name of Dement, and I will have to find those citations.

Q Is that D-e-m-e-n-t?

A Yes, it is.

Do you want those citations?

Q Yes, Doctor. Thank you.

A Dement, J. M., and Harris, R. L.,"Estimates of Pulmonary and Gastrointestinal Deposition for Occupational Fiber Exposures," National Institute for Occupational Safety and Health, NIOSH Publication No. 79-135 --

Q Just a moment, Doctor. Publication No. 79-135?

A 1979.

The next one is Dement, J. M., Harris, R. L.,

Symons, M. J., that's S-y-m-o-n-s, et al.,"Estimates of Dose Response for Respiratory Cancer Among Chrysotile Asbestos Textile Workers," presented at the BOHS Fifth International Symposium on Inhaled Particles, Cardiff, Wales, September 8 to 12, 1980.

Q Is that published in a journal, Doctor?

A I do not know.

And the material that I'm looking at is titled "Teaching Module on Asbestos-Related Disease," developed by the American College of Radiology, supported by National Cancer Institute, and National Institute of Occupational Safety and Health, June 1981. I know that can be obtained through the American College of Radiology.

Q Thank you, Doctor. Otherwise, I think that's sufficient. Otherwise, we'd have to let you review each of those articles and find the particular ones that you have in mind.

Can you tell me whether or not, to your memory -- I won't ask you to review the articles again or hunt for them --

A May I put these things away?

Q Certainly.

Can you tell me, again from your memory, whether or not the type of asbestos fiber is important in the development of carcinoma of the lung or -- excuse me -- of the pleura.

A I believe it is.

Q What is your understanding in that regard?

A May I look?

Q Yes.

You're referring now to "Asbestos," by Doll and Peto that we referred to earlier?

A Yes.

Q It was Publication 3 on the list.

A Okay. The overall view given by Doll and Peto, which is that crocidolite, amosite and anthophyllite all produce cancer of the lung and mesotheliomas of the pleura and peritoneum. They also indicate that similar respirable masses of chrysotile and amosite have been found to be less carcinogenic than crocidolite, while Walton concluded that animal studies point to chrysotile being at least as damaging and possibly more so than crocidolite or amosite at equal respirable mass exposure concentrations and much more damaging for equal amounts retained in the lungs.

Q Doctor, can you tell me what page you're reading from.

A Page 15.

Q Let me interrupt you, if I may.

Do you have any knowledge of articles from your reading of the literature that deal with the development of cancer of the colon with regard to the risk associated with different types of asbestos fibers?

A Yes.

Q What articles would they be?

A I have three articles that deal specifically

with chrysotile.

Q Can you just tell me which journals they're in, Doctor.

A They're all in the "British Journal of Industrial Medicine."

One of them is by A. D. MacDonald, 1984. Another one is by A. D. MacDonald, 1983, and the third is by J. C. MacDonald, 1980.

Q Thank you.

Doctor, do you know what type of asbestos fiber was contained in the material that was used by Mr. Bradley?

A I do not.

Q Doctor, do you have any opinion as to whether or not an individual first exposed to asbestos, of whatever type, in 1968, would be likely to develop a carcinoma of the colon, exhibiting symptoms, in other words, in 1977?

A I do not have direct information on that topic. However, the studies of lung cancer risk indicate that cases do occur within 10 years after the first exposure for that tumor.

Q For what tumor, Doctor?

A Lung cancer.

Q Are you familiar with any studies whatsoever that have studied the question of latency in colon cancer?

A These studies that I have looked at do have some information on that topic.

Q Is there, from your reading of the medical literature, an agreement among the medical community as to

the latency period required between first exposure and development of colon cancer?

A I'm not aware of agreement on that topic.

Q Do you have any recollection from your reading of the literature of the range of years that different investigators have reported with regard to the latency period, that is, between first exposure to asbestos and development of colon cancer?

A I would say that the latency issue has not been adequately defined for that tumor site.

Q Doctor, in your experience, and based upon your education and your reading of the literature, can you give us an idea of the various types of materials that could cause -- excuse me -- that are linked to colon cancer? In other words, environmental factors, diet, industrial exposures. Can you give us an idea of what those particular elements are.

A There have been a large number of studies of diet in colon cancer with conflicting results in some areas.

To summarize that literature briefly, there appears to be good evidence that dietary fat increases the risk of colon cancer, and that dietary fiber exerts a protective effect.

However, the literature on dietary fiber is somewhat less firm than that on fat.

There have been other studies that have -- single studies or in some cases a few studies that have shown

that cruciferous, c-r-u-c-i-f-e-r-o-u-s, vegetables exert a protective effect, that beer increases the risk of rectal cancer, that red meat is associated with colorectal cancer, that I think dietary vitamin intake is associated with a lower risk of colon cancer, that stool bulk is associated with a lower risk of colon cancer. A string of those.

To be succinct about it, I think the only ones that look firm are dietary fat associated with an increased and fiber with decreased risk.

As I mentioned before in our discussion, we have studied the role of physical activity which shows a clear protective effect, and our study has now been confirmed, to my knowledge, by four or five other studies around the world. So there's a clear indication that physical activity protects or is associated with lower colon cancer risk. In terms --

Q Doctor, I'm sorry. Go ahead.

A In terms of industrial exposures, there have been a few studies that have indicated occupational factors other than asbestos are associated with colon cancer.

There are a series of studies that have come from the automobile manufacturing industry in which model and patternmakers who work primarily with hard woods have increased colon cancer risk, and there have been a handful of studies concerning a cluster of colon cancer in a synthetic textile mill in Quebec. But that's not an asbestos mill. That's a mill that makes some sort of synthetic plastic fiber.

And to my knowledge, that essentially summarizes the literature.

Q Are you aware of any studies that indicate that any types of heavy metals, for instance, are linked to colon cancer?

Let me just give you a range of things. Heavy metals, chemicals such as benzene or petroleum distillates --

A Excuse me. Those are not heavy metals.

Q I know. Heavy metal, No. 1, or things like petroleum distillates, or things like chromates. Are there any types of other chemicals or materials that someone would come into contact with in an industrial setting that are linked to colon cancer, to your knowledge?

A To my knowledge, there are none that are clearly linked. I can give you a review of the IRAC Monographs within about a minute, if you'd like.

Q Sure.

A There's a suggested association with cadmium and cadmium compounds.

There are unsubstantiated hints of associations with tetrachloroethylene and trichloroethylene.

There are suggested associations with work in rubber manufacturing.

Q Doctor, what document are you referring to?

Thank you. Published in "Cancer Research," Volume 44, starting at Page 2244 through 2250, May 1984. The title is, "Target Organs for Carcinogenicity for Chemicals and

Industrial Exposures in Humans." A review of the results in the IARC Monographs on the evaluation of the carcinogenic risk to humans.

Thank you, Doctor.

Doctor, what particular factors that you're aware of in Mr. Bradley's case led you to conclude that his colon cancer was caused by the two factors you mentioned before, age and asbestos?

A In terms of age, it's well known, and I could give you a number of references that would indicate that the risk of colon cancer rises throughout adult life, in males, both in black males and white males, so age clearly influences the risk. I can give you those citations, if you like.

Q That's not necessary. Thank you, Doctor.

A In terms of asbestos, I think the most -- the two studies that are most convincing in that area are the study by MacDonald, reprinted -- printed in the "British Journal of Industrial Medicine" in 1980, which shows a dose response relationship between asbestos exposure and colon cancer risk, and I'm looking specifically at Table 7D, Table 8, and Table 10, and MacDonald in Table 10 indicates that subjects who have had heavy exposures in excess of a thousand -- their index of exposure is MPCF·years, which is -- I have to go back and look at that --

Q Okay.

A -- to be sure I'm stating it properly.

I think it's million particles per cubic foot times

years is what they're referring to. The risk is roughly 5.3 times that of the lowest exposure group for colon and rectal cancer.

Q Excuse me. The subjects with heavy exposures, which is defined as 1,000 MPCF --

A Dot year.

Q Do they indicate in the article the length or duration of the exposure that they observed when they calculate this data?

A Not in that table, although they do indicate that the exposure was accumulated up to nine years before the death of the case.

Q They don't give the total exposure for the population study?

Excuse me. The range of exposure for the population studied.

A In the table to which I'm referring, they have broken the population down into four exposure groups.

Q I see.

A And those groups are less than 30 MPCF-year, 30 to less than 300, 300 to less than a thousand, and then greater than or equal to a thousand.

And what we see is a stepwise increase in risk as exposure increases going from 1 to 5.3.

Q Does Mr. Bradley's exposure, in your opinion, fit within any of those four categories of amount of exposure?

A I would be speculating if I tried to tell you

what his exposure was.

Q Okay. I'll give you a hypothetical.

After reviewing his deposition transcript, it's my understanding that Mr. Bradley was exposed to asbestos pellets on the average of dumping 32 50-pound bags into a vat already filled with water, wearing a double paper mask at the time, between the years 1968 and 1972, his first exposure being in 1968.

From that information, are you able to reach an opinion as to whether or not his exposure -- excuse me. Let me also add that the vat of water which he was dumping the material into was covered with a covering of some kind. I don't know if it was metal or plastic. Had five openings in it. One was for -- two were for rods, the shaft of blades that mixed the material. Two were for ventilation hoses. And one was the opening in which he introduced the material into the water.

Does that information assist you in any way in determining whether or not his exposure would come within the four groups that you've referred to in Table 10?

MR. GLICKMAN: Just a moment. Before you answer that, I do have an objection to place on the record briefly.

MS. JONES: Sure.

MR. GLICKMAN: I think you've misstated the record, Counsel, in that Mr. Bradley testified he did not always wear a mask. He seldom wore one. Also, that he would not dump the asbestos into a tank of water. He would dump the asbestos in, then add water, stir it with a paddle

without the tank being covered, then add some more asbestos, then add some more water, stirring the mix, that the last batches of these bags would be the hardest to wet, as he described it, and he'd have to stir them vigorously with the paddle, and that the asbestos fibers would be floating around the room like snow, coating his nostrils, hair, clothes, et cetera.

Q BY MS. JONES: Doctor, with the information that I gave you, if you'll disregard what plaintiff's counsel indicated to you, are you able from that information alone to formulate an opinion as to whether or not Mr. Bradley's exposure comes within any of the four groups that are set forth in Table 10?

A No, because --

Q What additional information do you need?

A I would like to know the size of the room, what sort of ventilation there was in the room, how many air changes per hour, whether there were other sources of asbestos, the duration of time that the mixing tank was fully generating an aerosol exposure of asbestos. Ideally, I would like to have measurements --

Q Air sampling measurements?

A Measurements of asbestos in the air.

Q From the period of '68 to '72, in other words?

A Given my professional training, I think it would be speculative for me to try to guess what his exposures were based on that description.

Q I understand, Doctor.

I'm sorry.

A I did not get a chance to finish my answer to your question some time ago about what evidence or what materials I based my opinion on --

Q You referred to the two MacDonald studies -- I mean the MacDonald study,"British Journal," 1980, which you've just described for us and the three tables.

Is there an additional study that you want to indicate, Doctor?

A Yes.

Q Or additional response to that question?

A There are other materials --

Q Thank you --

A -- that I think are important.

Q Okay.

A The Selikoff article published in the New York Academy of Sciences in 1979 also indicates an increased risk of cancer of the colon and rectum with risk increasing with duration of exposure.

When I say that, I'm referring specifically to Table 16, Page 108.

Q Thank you, Doctor.

Is there any other article that you would like to reference in response to that question?

A Yes. This document --

MS. JONES: Off the record.

(A discussion was held off the record.)

THE WITNESS: This document -- are we on the record?

Q BY MS. JONES: Yes. We're on the record. Thank you, Doctor.

A -- which indicates --

Q That's the rat study we referenced before?

A Yes.

-- which indicates that rats fed chrysotile asbestos over their entire lifetimes developed adenomatous polyps in the large intestine, and this was viewed by the National Toxicology Program as evidence of carcinogenicity.

This study, I should say, contradicts previous studies that I have seen cited that indicate that animal studies show no relationship between asbestos exposure and colon cancer.

The last study that I think is worth mentioning to put the issue in perspective --

Q All right.

A -- is the Doll and Peto monograph, Table 3/1, which summarizes 16 mortality studies of asbestos workers in which gastrointestinal cancers were studied, and although this table in summary and the accompanying graphs that are derived from it show a relatively weak relationship between colon cancer and asbestos exposure -- or I should say, gastrointestinal tract cancer and asbestos exposure. I think that reviewing the two largest studies in this table, namely, the MacDonald study and the Selikoff studies which I have reviewed, accounts for a sizable proportion of these total studies, and they have findings that are contrary to this overall

opinion.

The area where I find an inconsistency between the opinion of Drs. Doll and Peto, and the studies on which this monograph is based, is in that misdiagnosis of mesotheliomas could lead to falsely elevated estimates of the number of colon cancer deaths, and the reason I find discrepancy there is the MacDonald study from 1980, wherever I've put it --

Q Right.

A -- clearly shows a dose response relationship for colon cancer. This study is based on exposure to chrysotile asbestos, as Drs. Doll and Peto clearly point out, and I agree with them, as far as we know, chrysotile asbestos does not cause peritoneal mesotheliomas, which then makes it extremely unlikely that there would be a misallocation of mesothelioma deaths into the category of colon cancer.

So although this point is interesting, I think there's an inconsistency between this conclusion and one of the large studies upon which it's based.

Q Doctor, do you have an opinion as to whether or not there is a level at which any individual can be exposed to asbestos without increasing their risk of getting a colon cancer?

A From my reading of these studies, there is no direct evidence upon which to base a distinction of that type.

The evidence regarding lung cancer, in my opinion,

indicates that there is no such cutoff for lung cancer risk.

Q Do you believe that the studies that are directed at lung cancer are accurate when evaluating a case of colon cancer?

A I don't know how to interpret that question.

Q Would you rely upon studies -- in other words, in evaluating the Carl Bradley case, a colon cancer case, if you were trying to determine the appropriate latency period or the likely latency period, the dose response relationship, et cetera, would you feel comfortable in relying upon data developed with regard to development of lung cancer from exposure to asbestos?

MR. GLICKMAN: Are you putting aside everything else he knows?

MS. JONES: Yes.

THE WITNESS: I thought I understood the question until the last point. Now I'm not sure I do.

Q BY MS. JONES: What I'm trying to find out, Doctor, is would you rely upon studies only dealing with lung cancer when you're trying to evaluate a case that is a colon cancer case?

A I would rely on a broader knowledge of the mechanisms of carcinogenesis, which indicate to my reading that there is no substance which is known to be carcinogenic for which there is a threshold below which there is no risk.

Q That's true of any carcinogen, in your experience?

A That basic model is assumed by many scientists to be the best representation of the truth for a variety of other carcinogens.

And I know of no reason in the case of colon cancer to assume that that model is wrong.

Q The model being that there is not, in the vernacular, a safe level; is that correct?

A That there is not a level below which there is no increased risk.

Q Doctor, when we've talked about these articles in passing and we've talked about latency period, do you have any opinion as to whether or not an individual exposed in 1968 would, by 1977, develop symptoms which led to the discovery of colon cancer? In other words, it's my understanding that in this case, Mr. Bradley's first exposure was 1968. He started having vomiting and other symptomatic problems in 1977, and he was diagnosed either late '77 or early '78. Is that period of time sufficient, in your opinion, in terms of a latency period for the development of colon cancer from exposure to asbestos?

A As we discussed earlier, I think that the latency period for colon cancer in relation to asbestos has not been well worked out.

Q So you would have no opinion in that regard?

A Again, I would base my opinion on a broader knowledge of environmental causes of cancer, which indicate that for a number of other agents, latency periods of

10 years are adequate for cancer to develop in response to exposure, and I would also base it on information that indicates that is also true for lung cancer in relation to asbestos exposure.

Q Do you have any opinion as to how long Mr. Bradley would have had the tumor developing before he exhibited symptoms?

A That is an extremely difficult question which would -- I would ask you to define what you mean by "the tumor developing."

Q In other words, the initiation of the cancerous process in the cecum. Would you expect a tumor to develop within two or three months to the size that it would cause the symptoms that I've described to you, vomiting and so forth, pain in the stomach, or would you expect that type of symptom to occur after several years of development of the tumor?

A I can't give you an overall answer to that. It would depend on the exact location of the polyp. If the polyp were located so that it interfered with the function of the ileocecal valve, it could be quite small and be symptomatic.

Q Do you have a range of years in mind that you would expect between the initiation of the tumor development and the development of the symptoms?

A What do you mean by "initiation"?

Q By the cells in the cecum starting to multiply inappropriately and develop a tumor. As a layman, that's

the best I can explain what I'm trying to get at.

A That's not what I would call initiation.

Q All right. What is initiation, Doctor?

A Initiation in my mind refers to the intracellular process by which DNA is irrevocably changed so that unrestrained growth may be expressed at a future date, and a tumor that -- or I should say a cell that has been changed may then lie dormant for a very long or a very brief period of time before it begins to proliferate.

Q Do you have any idea as to how long a tumor in the cecum would develop before the symptoms were exhibited, in other words, the vomiting and stomach pains?

A I'm sorry. Say that again, please.

Q Yes. Once the tumor starts to develop, is there any range of time between the beginning of the development of a tumor and Mr. Bradley's noticing problems with his stomach, vomiting, and so forth?

A And again, what do you mean by "beginning of development"?

Q Let me back up. Doctor, if I understand you correctly, initiation is when the DNA is altered so that at some future date a tumor will develop, is that correct, may develop?

A That's a reasonable approximation.

Q I'm now trying to determine when that point in time comes and the tumor starts to develop, a mass starts to develop in the colon, for instance, in the cecum. Is there a range of time, that is, six months to a year, you

would expect someone to notice a problem, four to five years you would expect someone to notice a problem, go to a doctor, present the symptoms he has, and then get the appropriate workup?

In other words, an individual could have a developing tumor and not know it for a while. Am I correct in that?

A You're correct in that, but to answer your previous question, I think that that range is highly variable.

Q All right.

A There are some tumors that are very fast-growing, and there are some that are very slow-growing. There are also some patients who are quite stoical who do not seek help for a long time after they have had a tumor which would be quite symptomatic in most people.

Q Do you know what type of tumor that Mr. Bradley had?

A I believe it was a scirrhous carcinoma.

Q Is that type of a tumor a fast-growing or slow-growing tumor, if you know?

A I don't know offhand. I can look.

Q That's all right, Doctor. Thank you.

MR. GLICKMAN: It's 1:30. We've got to be in court by 2:00. What do you propose here, Counsel?

MS. JONES: Well, let's go off the record, please.

(A discussion was held off the record.)

(A brief recess was taken.)

(Mr. Casselman no longer present.)

MS. JONES: Back on the record, please.

Q Doctor, let me just be sure I understand you correctly in the opinion you've expressed and the thoughts you've expressed today.

Is it correct that it is your opinion that there is no threshold level below which the risk is not increased for the relationship of exposure to asbestos to development of colon cancer?

A There is no evidence to indicate that is true, and I share the view with many other scientists that -- or I should say I share the assumption with other scientists that there is no threshold below which there is no increased risk.

Q Are there any particular studies that deal with colon cancer which support that opinion, that is, studies of duration and amount of exposure to the development of colon cancer?

A Exposure to what?

Q Asbestos. Excuse me.

Let me try again, Doctor. Is there any study that deals specifically with the exposure of individuals to asbestos and the development of colon cancer, focusing on the threshold limit, if any? Threshold being a safe limit, in other words.

A Are you asking -- I'm not sure what you're asking. I'm having trouble with that.

Q Let me put it this way. Upon what do you

base your opinion, along with other doctors or scientists in the field, that there is no safe limit of exposure to asbestos and the development of colon cancer?

A It is based upon the studies that I've cited for you that show a dose response relationship between asbestos exposure and colon cancer risk, and it's based upon an animal model which shows evidence of carcinogenicity of asbestos for colon polyps, and it is based on a wide variety of studies of other tumor sites in relation to other environmental agents which do not show any threshold below which there is no risk.

And let me add, and is based on other studies of asbestos exposure in relation to lung cancer, which similarly failed to show a threshold below which there is no increased risk.

Q Anything else, Doctor?

A I believe that's all.

Q Are you familiar with any studies of workers specifically in the paint industry, such as Standard Brands, manufacturing paints, with regard to their mortality rate and the development of cancer?

A I could pull those out for you. I have some.

Q Can you identify them for me, please.

Off the record.

(A discussion was held off the record.)

MS. JONES: Back on the record, please.

Q Doctor, while you're thumbing through that, do you recall in what journal or by what agency those

studies were done with regard to the paint industry?

A Well, I'm trying to find them. I can't cite them until I find them.

MS. JONES: Let's go off the record, then, and give the doctor an opportunity to search them out.

(A discussion was held off the record.)

MS. JONES: Back on the record.

Q I'm interested, Doctor, with regard to the development of cancer, yes.

MR. GLICKMAN: The doctor asked you off the record, "Do you want cancer mortality?" Now you're saying just development of cancer?

MS. JONES: The question originally, Counsel, was with regard to mortality and with the development of cancer.

MR. GLICKMAN: Now which do you want? Both?

MS. JONES: Yes.

Q I am particularly interested in studies with regard to cancer in individuals in that industry, if that clarifies it.

Doctor, while you're thumbing through that, let me ask one question that may cut this short. Do you have any recollection of those articles with regard to their findings of the development of cancer in individuals employed in that industry?

A I know I have recently seen a mortality study of painters, and I can't put my hands on it right now, and I do not know what the findings were, but it's in this room.

Q Somewhere.

A I just -- I just can't put my hands on it right now.

Q Did you use that particular article in any way in evaluating the Carl Bradley case?

A The article that I mentioned I'm aware of and can't find?

Q Right.

A No.

Q Doctor, in evaluating the Carl Bradley case, did you assume that Mr. Bradley had a high fat diet?

A I made no assumption about his diet whatsoever.

Q Did you make any inquiry with regard to his dietary habits?

A I read the medical records that I was given specifically to find out what his dietary history was, and found no information on that topic.

Q Is that, in your opinion, an important factor in evaluating the Bradley case?

A The dietary studies that indicate that fat, dietary fat is a risk factor for colon cancer indicate that the risks are of the order of magnitude of one-and-a-half to two-and-a-half-fold for dietary fat.

Those risks are somewhat weaker than the risks I see for people exposed to asbestos, the risks of colon cancer among people who have been exposed to asbestos.

Q Are you saying by your statement -- I don't want to put words in your mouth, but I want to understand your position. Are you saying that because, in your opinion,

asbestos -- and again based upon the studies you've stated -- there's a stronger relationship between exposure to asbestos and development of colon cancer, that the dietary habits of Mr. Bradley can be ignored?

A No.

Q Is it correct, then, that both asbestos and a high fat diet, if he had one, would, in your opinion, contribute to the development of colon cancer?

A Yes. If he had a high fat diet, that would increase his risk of colon cancer.

Can I continue?

Q Certainly.

A Given that I have no information on his life style, I chose not to speculate on that issue of what sort of diet he had. If we were going to do that, I would also point out that there is a growing body of evidence that indicates physical activity protects against colon cancer, and that the description of Mr. Bradley's work would lead me to think that he was, in fact, quite physically active on the job, so that he ought to have a lower risk as a result of that factor.

Q That factor taken alone, you mean?

A That factor would act to reduce his risk.

Q The other two factors increasing his risk could be a high fat diet and exposure to asbestos; is that correct?

A Yes.

Q And the factor decreasing his risk, in your

opinion, would be the physical activity?

A Yes.

Q Are there any other factors about which you may not have any particular information in this case that you would want to consider for complete evaluation of Mr. Bradley's case?

A His dietary fiber intake might also play a role.

Q Anything else, Doctor?

A Those are the only known factors that play a role in colon cancer.

Q Doctor, are you able to say to a high degree of medical certainty that Mr. Bradley's cancer of the colon was caused by his exposure to asbestos?

A Based on the studies that I have cited, including both human evidence and animal evidence, it is my opinion that asbestos increased Mr. Bradley's risk, and that if he had not had exposure to asbestos, he would not have contracted colon cancer at the age he did.

Q And it's your opinion that, to a medical certainty, that the latency period, that is, the time between the first exposure in 1968 and development of symptoms in 1977, is sufficient for the development of Mr. Bradley's colon cancer?

A As we have discussed, I think there is no information in the literature upon which to base that sort of opinion. My opinion is based on analogy to lung cancer in relation to asbestos, which says that is adequate latency,

and the relationship between other carcinogens and human cancer which says that 10 years is adequate latency.

MR. GLICKMAN: Please mark your notes at this point. Thank you.

Q BY MS. JONES: Do you have any knowledge of Mr. Bradley's family history with regard to diseases, diabetes, cancer, anything else?

A I recall reading in, I think it was Dr. Monosson's note, a statement that there was no familial incidence of cancer in Mr. Bradley's family.

Q Do you have any opinion as to whether or not Mr. Bradley's socioeconomic stratum or status would in any way contribute to development of colon cancer, that is, increase or decrease the risk?

A Yes.

Q What opinion is that?

A It's clear in L. A. County that colon cancer risk increases with increasing socioeconomic status. It's a disease primarily of the industrialized world and tends to be more prevalent among the affluent segment of that world. Colon cancer incidence is lower in people who have lower incomes and blue collar jobs than it is in people who have white collar jobs.

Based on my knowledge of what his job was, and assuming that he had a socioeconomic status that was determined primarily by his work, he would be at relatively lower risk -- in other words, he would be in a socioeconomic stratum that would have slightly lower risk.

Q That's based upon your study for L. A. County?

A That's based upon a review of the Cancer Surveillance Program -- Cancer Surveillance Project data for Los Angeles County.

Q That was the data base you used in one of your studies; is that correct?

A Yes.

Q Doctor, with regard to colon cancer in the United States, do you know what the incidence is throughout the United States on a yearly basis?

A I can look that up.

Q Thank you. Would you, please.

A Where would you like it?

Q I'm sorry?

A What part of the country? The whole country?

Q Throughout the United States.

A What year?

Q The most recent information you have.

A Now, I'll have to ask you exactly what type of data you would like to have.

Q Doctor, I'm interested in, first of all -- let me just explain to you the questions I'll be asking, and that may help you to pick from the chart the information that's most applicable.

I'm interested in knowing what the incidence of colon cancer is in the United States, and of those persons who were diagnosed with colon cancer, whether or not there are known and unknown causes, and which cause or unknown

cause is greatest.

A Can we start with the first question?

Q Sure.

A What type of incidence would you like?

Q What types do you have in your chart, Doctor?

A I have age specific. I have age adjusted. And I have cumulative.

Q Let's start with cumulative, I guess. With regard to cumulative data --

A Cumulative incidence, age, '85?

Q Yes.

A That will take a little time to find that.

Q If that's difficult to find, then can we start with an individual in Mr. Bradley's age group, that is, 35 to 45, something like that.

A You mean by age specific?

Q Yes.

A For black males?

Q Yes.

A Nationwide?

Q Yes. Is that easier?

A Well, I think I know where that is. What age group did you want?

Q 35 to 45 or 35 to 40.

A I can give you 35 to 39.

Q All right.

A In 1973 to 1977, age specific incidence per hundred thousand population for black males, for all the

SEER reporting areas except Puerto Rico, was 3. -- no. I'm sorry. '73 to '77 was 5.1.

Q 5.1 represents what, Doctor?

A The number of incident cases per hundred thousand black males, age 35 to 39, in the cities that were part of the SEER reporting network.

Q Is Los Angeles one of the cities in the SEER reporting network?

A No, it is not.

Q All right. Then that's not going to help me too much.

Do you have any data with regard to Los Angeles specifically, or this geographic area?

A No, I can't give you age specific off the top of my head. I could get that, but I don't have that within my reach in this office right now.

I can give you age adjusted incident rate per hundred thousand black males in Los Angeles County.

Q Fine. We'll go with that, Doctor.

A And this is based on 1972 through 1981.

Q All right.

A And the number would be 21.9 cases per hundred thousand black males per year.

Q Doctor, the chart or the article that you're looking at, does that or does any of the other information you have indicate to you whether or not any of the cases of colon cancer in Los Angeles County, from which that data was taken, are of unknown causes?

A I don't understand the question.

Q What I'm trying to find out is, with regard to colon cancer, is it typical for an individual diagnosed with colon cancer to have a known cause of that colon cancer?

A What do you mean, is it typical?

Q Are most people who are diagnosed with colon cancer in those cases, is it true or not true that there is a known cause for the colon cancer?

A The only correct answer to that question is to indicate that there are known causes of colon cancer that we have discussed.

Q Right.

A Such as dietary fat, lack of dietary fiber, lack of physical activity, et cetera. And that one could make an estimate of the risk the individual had as a result of the presence or absence of those factors.

Q In the reported literature, is it true that most colon cancers are of unknown cause?

A I don't know any other way to answer it than the way I just did. To say again, there are factors that clearly increase risk, and there are factors that decrease risk.

Q Thank you, doctor.

Doctor, would an individual's consumption of alcohol or the rate of consumption have any effect on the development of colon cancer?

MR. GLICKMAN: Regardless of the quantities or years consumed? Is that what you mean?

MS. JONES: I'm just asking for a general question right now, and I'll be more specific later.

Q Is there any relationship at all, is what I'm asking, with regard to alcohol consumption and development of colon cancer?

A There is no conclusive evidence to indicate that alcohol consumption is a risk factor for colon cancer.

Q Are you aware of any studies that suggest such a link?

A Yes. Do you want me to get them?

Q No, not yet.

Do you have any knowledge as to Mr. Bradley's usual alcohol consumption, that is, daily intake?

A I read in Dr. Monosson's -- I'm not sure whose note it was -- that he consumed about a half a pint of liquor per day on a regular basis, and that he stopped around the time he was diagnosed.

Q With regard to the medical literature that suggests such a link, did you take that into consideration in your evaluation of the Carl Bradley case?

A I took it into consideration, but my view of the studies, the overall -- the summary of studies of dietary factors is that alcohol does not play a causative role in colon cancer.

Q Doctor, in your consideration or your opinion -- I'm sorry -- your evaluation of the Carl Bradley case, would Mr. Bradley's lack of pulmonary indices of asbestos exposure influence your decision as to whether or

not he developed colon cancer from his exposure to asbestos?

A It's well known that interstitial changes in the lungs are more frequent the more heavily exposed people -- the more heavily exposed a group of people is.

However, even among heavily exposed workers, there are still workers who show no evidence of pulmonary change on their chest x-rays. So it is entirely possible that an individual could have had heavy exposure to asbestos and still not show changes indicative of either pleural thickening or interstitital fibrosis on his chest x-ray.

Q Doctor, you said "entirely possible." Is it probable that that would happen in an individual heavily exposed?

A Within 10 years of exposure, yes, I think it is probable.

Q It's probable that an individual with heavy exposure would not exhibit fibrosis; is that correct?

A Within 10 years of exposure, yes, the majority of people heavily exposed would not show fibrosis within 10 years.

Q Would the same be true with regard to pleural plaqueing, in your opinion?

A I believe that would also be true, the majority would not show evidence of pleural change within 10 years of first exposure.

Q Doctor, if I can summarize, just to be sure I understand your position, is it correct to state that, in

your opinion, an individual with the type of job that Mr. Bradley had, that is, someone who would be physically active as opposed to sitting in a desk, would have a decreased risk of developing a colon cancer?

A Compared to whom?

Q Good question. With regard -- let me strike the last question and start again.

Is it correct there are certain risk factors that should or can be considered when evaluating a person for colon cancer?

A Would you restate that question?

Q Sure. Are there certain factors in an individual's life style, employment, et cetera, that may be considered in evaluating the likelihood of an individual developing colon cancer?

A Yes.

Q Is exposure to asbestos one of those factors?

A Yes.

Q Is increased dietary fat one of those factors?

A Yes.

Q Is physical activity one of those factors?

A Yes.

Q Is socioeconomic class one of those factors?

A Yes.

Q Are there any other factors?

A Age, sex, race, place of birth.

Q Anything else, Doctor?

A Place of residence.

Q From your understanding of the literature, was Mr. Bradley's age an increased or decreased risk or no effect at all with regard to his development of colon cancer?

A In comparison to who?

Q The general population in Los Angeles.

A That question doesn't have any meaning to me.

Q What information do you need to respond to that question? Obviously, I'm leaving out some factors that you need to consider.

A We usually discuss risk in relation to other people of the same sex, race, and age group.

Q All right. So, in other words, an individual who is black male of that age, does that assist you in responding to the question?

A Yes. And the reason that we discuss that is those are the factors that one cannot change. So it's not a meaningful question to ask whether someone's -- well, I don't remember exactly the form of your question, but without comparing people to people who share those same unalterable risks, the question has no meaning.

Q So, then, properly stated, I should have asked you an individual of similar age, the same sex and the same race, is it then correct that that individual exposed to asbestos would have an increased risk of developing colon cancer?

A I believe so. Let me state it in my own words.

Q All right. Thank you, Doctor.

A It is correct to think that an individual who was exposed to asbestos would have a higher risk of colon cancer than individuals of the same sex, race and age who were not exposed to asbestos.

Q Thank you.

Did Mr. Bradley's place of birth have any effect upon your risk assessment of his developing colon cancer?

A I don't recall his place of birth offhand. May I look?

Q Certainly.

(Mr. Casselman enters deposition room.)

THE WITNESS: He was born in Missouri. As far as I know, that would not greatly change his risk in comparison to other black males of his age group in the United States.

The instance in which place of birth changes risk is when one is born in, for example, a low-risk country, one tends to maintain that low-risk for some decades. So, for example, people born in Central America have lower risk of colon cancer than people born in this country who are of the same ethnic origin. That appears not to be important in this case.

Q BY MS. JONES: Was his place of residence of importance in assessing the risk to Mr. Bradley of developing colon cancer? In other words, the fact that he resided in the Los Angeles area.

A My recollection is that colon cancer rates for Los Angeles County are not markedly different than

those of the rest of the United States, and if that is true, as I believe it is, then his place of residence did not alter his risk in comparison to the rest of the United States black male population.

If we need to document that Los Angeles County incidence rates for colon cancer are similar to those of the rest of the United States, we could do that. I am working on recollection. I'm sure there are small differences, but I think they are very small.

Q Would the mere fact that Mr. Bradley was a man rather than a woman affect his risk of developing colon cancer?

A As you and I discussed about 10 minutes ago, yes, but the only valid comparison is to compare him to other men in terms of risk. We don't usually compare people who have unalterable risk factors, because those comparisons have no meaning.

Q The same question, Doctor, with regard to his race. Does the fact that he was black rather than some other race alter his risk of developing colon cancer?

A And my question would be, then, in relation to whom?

Q To males of a similar age.

A In fact, my recollection is that based on the SEER data that I looked at before, the rates for black males are virtually identical to the rates for white males in his age group.

Q Doctor, have you ever done any consultation

work with other doctors or investigators at this university with regard to asbestos materials and exposure to asbestos?

A I'm not sure exactly what you're asking.

Q Have you ever done any studies with other individuals at this university with regard to development of diseases in individuals who have been exposed to asbestos?

A We discussed at the start of this deposition all the studies I have done that have any relationship to asbestos.

Q And there's nothing else that you need to add to that at this time; is that correct?

A None that I can recall.

Q Doctor, do you feel that you have sufficient information from the material that you were supplied and that we reviewed on Mr. Bradley in particular to express an opinion with medical certainty that his colon cancer resulted from exposure to asbestos?

A Based on the records that I was given regarding Mr. Bradley specifically, and the medical literature that I reviewed, it's my opinion that had Mr. Bradley not been exposed to asbestos, he would not have developed colon cancer at the age he did.

Q Is there any additional information that you would prefer to have in assessing this case? In other words, to make you feel more sure about your opinion, a stronger foundation, in other words. Is there any additional data you would want to have?

A I would like very much to have specific measurements of exposures that accurately represented Mr. Bradley's asbestos exposure.

Q What would his levels of exposure tell you with regard to his risk of developing colon cancer?

A They would allow me to make a more precise estimate of his risk by using the medical literature that we have already discussed.

Q Doctor, from the information that you have, you said that he did have an increased risk; is that correct?

A I believe so.

Q What exactly was that risk, if you can tell us? Can you quantify it for us?

A Without knowing his exact exposure history, I can give you a range.

Q All right. And you are referring now to what article, Doctor?

A I'm referring to the MacDonald article in the "British Journal of Industrial Medicine" in 1980.

Q Thank you, Doctor.

A That article leads me to believe that the upper limit of his risk would not exceed fivefold above that of the nonexposed population.

I said that awkwardly. Would not exceed five times that of the nonexposed population.

Q All right.

A It would be speculative for me to say how

small the lower limit of the increased risk might be without knowing his exposure. His risk is somewhere between 1 and 5.

And if I were to assume that he had exposure equivalent to the heavily exposed workers in this MacDonald study I previously cited, his risk would be fivefold.

Q Okay. Thank you, Doctor. I have no further questions.

Counsel, do you have something?

MR. CASSELMAN: In light of the hour, and under the circumstances, I don't. I may reserve that right if counsel will allow it later, but we have to be in court, and I don't think I have much choice.

MR. GLICKMAN: I don't think there's any choice. It's now 2:25. This was estimated to be a two-hour depo, and I have no questions.

MS. JONES: Excuse me. You estimated two hours.

MR. GLICKMAN: I told Joe Bogan that yesterday. I told you that this morning.

MS. JONES: Right. A little bit late, Counselor. I appreciate your estimate, but having never met Dr. Garabrant before, there are a lot of questions I asked him that I would not necessarily have to go into if I ever depose him again.

Thank goodness; right?

Counsel, you do have a few minutes. Is there anything you want to ask?

MR. CASSELMAN: I do, but there's no point in getting started for three minutes, literally.

MS. JONES: Anything else, Counselor, Mr. Glickman?

MR. GLICKMAN: No. I want to put something on the record about the doctor's signature, and I assume you're going to have this transcript expedited since we may start trial tomorrow?

MS. JONES: Yes. Those assumptions are all correct. I'd like to propose the following stipulation, that the reporter be relieved of her duties as follows: That she will prepare the original transcript and forward it -- do you want to waive signature on this, or do you want him to review it?

MR. GLICKMAN: Well, I think the doctor would be entitled to review and correct and sign under penalty of perjury his transcript.

MS. JONES: I'll leave it up to you.

THE WITNESS: I'd like to read it.

MS. JONES: All right. Fine. Once the reporter has prepared it, she will forward it, I guess by messenger to the doctor, who can review it, make any corrections that are necessary, and sign it under penalty of perjury.

Off the record.

(A discussion was held off the record.)

MS. JONES: Can you give me an estimate of how much time you need to review it?

MR. GLICKMAN: Keep in mind he's never had his deposition taken before.

THE WITNESS: How thick will that be is more the issue.

MR. GLICKMAN: About as thick as that.

THE WITNESS: The typing is bigger, I know.

MS. JONES: It reads easily, Doctor.

MR. GLICKMAN: It does read easily.

THE WITNESS: You probably know more than I about that. I would think a couple of hours to read through it if I have to do it carefully. Is that --

MS. JONES: Sure.

THE WITNESS: -- a reasonable number?

MR. GLICKMAN: I think you need a couple days, because you won't be able to do it continuously. What do you think, Dave?

THE WITNESS: You meant over what period of time could I complete it?

MS. JONES: Sure.

THE WITNESS: Not how many hours would it take me to do it?

MR. GLICKMAN: I think he needs a couple days' time, at least.

THE WITNESS: I'm going out of town on Friday.

MS. JONES: All right. Then we have to have it done before Friday.

THE WITNESS: Okay. I'll have it for you Friday if I have it tomorrow.

MS. JONES: Off the record, please.

(A discussion was held off the record.)

MS. JONES: The doctor has indicated that he'll do his best to have this document reviewed, completely reviewed

and signed under penalty of perjury by Wednesday afternoon.

THE WITNESS: Thursday afternoon.

MS. JONES: I'm sorry. Thursday afternoon. Pardon me. Today is Tuesday. The transcript will be delivered to you sometime tomorrow afternoon --

MR. GLICKMAN: What do you want him to do with the original?

MS. JONES: -- which is Wednesday, and then hopefully you'll be able to complete your review, make any corrections that are necessary, and sign under penalty of perjury by Thursday afternoon, and you can contact the reporter's office -- do you want to keep the original, or do you want to have it returned to the reporter?

MR. GLICKMAN: The reporter.

MS. JONES: Then the reporter will retrieve it and keep custody of the original, so if you'll just call her, and her number and so forth will be on the transcript, and you won't have any difficulty finding that.

Let's see. What did I forget? His fee is $250 an hour.

MR. GLICKMAN: What do you think would be fair, considering it's now 2:30? You cut into his schedule.

MS. JONES: There is something else to add --

MR. GLICKMAN: What do you think would be fair, Doctor?

THE WITNESS: I think 1,250.

MS. JONES: There's something else to add -- let me stop and think -- to the stipulation.

The reporter, after receiving the original transcript, will then notify all parties of any changes made by the doctor.

Off the record.

(A discussion was held off the record.)

MS. JONES: And that will also be completed within 24 hours of receipt by the reporter of the original transcript.

MR. GLICKMAN: How about the final stipulation? If for some reason the trial starts --

MS. JONES: Well, it will definitely start. We know that.

MR. GLICKMAN: -- and it's not signed and corrected, that either party can use a certified copy in lieu of the original as if it had been signed and corrected?

MS. JONES: Sure.

MR. GLICKMAN: Is that okay, Dave?

MR. CASSELMAN: Yes.

MS. JONES: One final one. If the original for any reason is lost, a certified copy can be used as though it were the original.

MR. CASSELMAN: So stipulated.

MR. GLICKMAN: Sure.

(A discussion was held off the record.)

MS. JONES: Doctor, you can put this on the record. If for any reason I cannot locate those articles that you have used, I'll let you know, and if it's a substantial amount, we'll have a copy service come over and copy them.

So if you'll just keep them all in the same group, then the copy service will know what to copy.

THE WITNESS: I will do that.

MS. JONES: Thank you very much.

(The deposition concluded at 2:30 P.M.)

I declare under penalty of perjury under the laws of the State of California that the foregoing 113 (one-hundred thirteen) pages are true and correct.

Executed this ____ day of _____,

1986, at _____, California.

_____

DAVID H. GARABRANT, M.D.

STATE OF CALIFORNIA) SS

I, Lucia Moskal, CSR 1222, a notary public in and for the State of California, do hereby certify:

That prior to being examined, David H. Garabrant, M.D., the witness named in the foregoing deposition, was by me duly sworn to testify the truth, the whole truth, and nothing but the truth;

That said deposition was taken down by me in shorthand at the time and place herein named and was thereafter transcribed into typewriting under my direction, said transcript being a true and correct copy of my shorthand notes.

I further certify that I have no interest in the outcome of this action.

WITNESS my hand and seal this 8th day of October, 1986

OFFICIAL SEAL
LUCIA MOSKAL
NOTARY PUBLIC - CALIFORNIA
LOS ANGELES COUNTY
My comm. expires JUN 25, 1990

Lucia Moskal, CSR 1222
Notary Public in and for
the State of California

August 1986

CURRICULUM VITAE

A. Personal Information:

Name in Full	David Hay Garabrant, M.D., M.P.H., M.S.
Business Address	Department of Preventive Medicine University of Southern California School of Medicine 2025 Zonal Avenue PMB B-306 Los Angeles, CA 90033
Business Phone	(213) 224-7355
Home Address	1880 Carlisle Drive San Marino, CA 91108
Home Phone	(818) 308-2071
Date of Birth	June 22, 1950
Place of Birth	Newark, NJ
Citizenship	U.S.A.
Marital Status	Married
Spouse's First Name	Janet
Children	Matthew, Alice
Social Security Number	157-42-4991

B. Education:

High School	Westfield High School, 1968
College	Tufts College, B.S., Chemical Engineering 1972, Medford, MA
Medical School	Tufts University School of Medicine, M.D., 1976, Boston, MA
Internship	Georgetown University Hospital, July 1976 - June 1977, Medical Intern
Residencies	Harvard School of Public Health, September 1978 - June 1980, Occupational Medicine University Hospital, Boston University Medical Center, July 1980 - June 1981, Internal Medicine
Fellowship	Georgetown University Hospital, September 1977 June 1978, Internal Medicine, Ambulatory Care
Public Health School	Harvard School of Public Health, M.P.H., 1979 Harvard School of Public Health, M.S., Physiology (Occupational Medicine), 1980
Honors and Awards	Awarded Training Grant for Study and Research in Occupational Medicine from the National Institute for Occupational Safety and Health, 1978, renewed 1979 Awarded a seat on the Tufts Medical School Admissions Committee, 1975 Graduated Magna Cum Laude, Tufts College, 1972 Tau Beta Pi Engineering Honor Society, 1971

Depts' A for Sl.
10-7-86
Wit: Garabrant
fm. N.P.

Licensure	District of Columbia, 1978, (Certificate - 10775) Maryland, 1977, (Certificate - D-20626) Massachusetts, 1978, (Certificate - 42987) California, 1982, (Certificate - G-47344)
Board Certification	Internal Medicine, 1981 Preventive Medicine, 1982 Subspecialty certification in Occupational Medicine, 1982

C. Professional Background:

Academic Appointments

Assistant Professor, University of Southern California School of Medicine, 1981-present
Teaching Assistant in Medicine, Boston University School of Medicine, 1980-81

Specific Teaching Responsibilities

Graduate Level Courses

Introduction to Clinical Medicine, Year II. University of Southern California School of Medicine. 1981-1983

Preventive Medicine 563. Occupational Medicine Administration (taught during Spring semester to residents in Occupational Medicine, USC School of Medicine, 1984-1986)

Preventive Medicine 561. Basic Problems in Occupational Health (taught during fall semester to residents in Occupational Medicine, USC School of Medicine, 1984-86)

Family and Preventive Medicine, Year 1 Medical School Curriculum, lectures on occupational cancer, heavy metals toxicity, biologic monitoring (taught every year, USC School of Medicine, 1981-1986)

Year 3 Medical School Curriculum, Review of Basic Sciences. Review of Occupational Health (taught at USC School of Medicine, 1984-1985)

Invited lecturer, USC School of Public Administration, graduate course on Health in the Workplace. Lecture topic: Legal and Ethical Issues regarding Occupational Safety and Health, 1985-86

Invited lecturer, USC Institute of Safety and Systems Management. Course on Industrial Safety. Lecture topic: Health Hazards in the Petroleum Industry, 1985

Graduate Student Committees

MS Thesis Chairman - Melody Kawamoto: Respiratory effects of cotton dust exposure in the cotton garnetting industry (USC, 1985)

MS Thesis Committee Member - Jonathan Bernstein - in progress
John Barone - in progress

Clinical Teaching

Director, Occupational Medicine clinical rotations for residents in Occupational Medicine, USC School of Medicine. (Taught and supervised clinical activities of residents at Huntington Memorial Hospital Center for Occupational Health and at Barlow Hospital, 1983-86)

Director, clinical rotation with Cal/OSHA for Occupational Medicine residents, USC School of Medicine. Supervised field rotation in which residents worked with Medical Unit of Cal/OSHA in enforcement activities of occupational safety and health statutes, 1984-1986

Post-graduate Courses

Program Chairman. 29th Annual Western Occupational Health Conference. Western Occupational Medical Association. Irvine, CA, 1985

Program Committee Member. American Occupational Medical Association Annual Meeting. Los Angeles, CA, 1984

Seminar Faculty Member. Epidemiology for the Occupational Medicine Physician. American Occupational Medical Association. Los Angeles, CA, 1984

Seminar Faculty Member. Toxicology. Quality Care in the Workers' Compensation system. Post graduate course sponsored by the State of California, Division of Industrial Accidents Workers' Compensation Appeals Board and USC School of Medicine. Los Angeles, CA, 1985

Seminar Faculty Member. American Occupational Medical Association Basic Curriculum in Occupational Medicine. Denver, CO, 1984

Occupational Epidemiology Forum, held 3 times a year jointly by Occupational Medicine Departments at USC, UCLA, and Irvine. 1981-1986

Service

University Service

Member, USC Comprehensive Cancer center 1984-present
Representative Alternate, Medical Faculty Assembly 1985-present
Representative Alternate, Year 1 Curriculum Committee, School of Medicine, 1986.
Reviewer, Scientific Proposals to USC faculty innovation Award, 1986-

Departmental Committee (Preventive Medicine)

Director, Medical Practice Plan Committee, 1983-1985
Secretary, Family and Preventive Medicine Associates (medical practice plan for Departments of Family and Preventive Medicine), 1985-present
Search Committee, 2 biostatistics faculty, (tenure track), 1984-1985

Service to Outside Institutions

Teaching of UCLA and UC, Irvine graduate students. Teach topics in cancer epidemiology, heavy metals toxicity, neurobehavioral effects of solvents, occupational lung disease, introduction to occupational medicine, 1981-1986

Chairman, Committee on Occupational and Environmental Health, American Lung Association of Los Angeles County, 1984-1985

Reviewer, Occasional Scientific Manuscripts

Journal of the National Cancer Institute
Cancer Research

Specific Administrative Responsibilities

Member, Education and Clinical Care Committee, University Hospital, 1980-81
Coordinator of Medical Practice Plan for Departments of Pediatrics, Family Medicine and Preventive Medicine, 1982-1986
Year I Curriculum Committee, 1986-

Military Service

None

Other Employment or Activity

Staff Physician, Occupational Medical Clinic, Norfolk County Hospital, Braintree, MA 1979-80

Staff Physician, Boston Edison, Co., Boston, MA, 1979-80

D. Society Memberships:

American Occupational Medical Association 1982-present
- elected to fellowship, 1986
American College of Physicians, 1980-present
American College of Preventive Medicine, 1985-present
- elected to fellowship, 1986
American Academy of Occupational Medicine, 1985-present
Western Occupational Medical Association, 1982-present

Offices in Professional Societies

Western Occupational Medical Association
- Board of Directors, 1984-present
American Occupational Medical Association
- member, Occupational Surveillance Committee, 1986-present

Consultantships

State of California, Division of Industrial Relations, Occupational Safety and Health Administration (CAL/OSHA), Medical Unit, 1984-present

Community Service (volunteer)

American Lung Associaton of Los Angeles County. Service on Community Eduation Committee, Occupational and Environmental Health Committee, 1983-1986
Los Angeles Coalition for Occupational Safety and Health. Service on Health Technical Committee, 1982-1985
Pasadena Dispensary. Presentation to the Board of Directors on occupational health in the community, 1983
Mastectomy Recovery Plus. Educational seminar on breast cancer epidemiology, 1985
Cancer Information Service of California. Educational seminar on cancer etiology and epidemiology, 1985
International Association of Scenic and Title Artists Local 866. Presentation on health hazards to artists, 1984

E. Research Activities:

Major Areas of Research Interest

Occupational Cancer Epidemiology
- occupational factors in central nervous systems tumors
- methodology for using cancer registry data for defining occupational cancer risks
- gastrointestinal cancer and occupational factors. Studies of occupational factors in cancer of the esophogus, stomach and colon

Epidemiology of Occupational Pulmonary Disease
- bronchoconstrictive effects of formaldehyde, cotton dust, methylmethacrylate

Research in Progress

Occupational factors in colorectal cancer.
Central nervous system cancer in the aerospace industry.
Reactive airway disease among manicurists exposed to methyl methacrylate.

Research Grants in Past Five years

As principal investigator

1. American Lung Association/078082/Respiratory Disease in Borax Workers/DH Garabrant/$28,810/11-1-82 through 10-31-83.

2. Rohr Industries/Mortality Study of Aircraft Manufacturing Employees/DH Garabrant/$103,781/2-1-84 through 1-30-86.

3. State of California/44404118/Study of Pulmonary Function in Cotton Garnetters/DH Garabrant/$9985/4-4-85 through 10-30-85.

4. NCI/K04 CA01155-01 - Research Career Development Award/Occupational Factors in Cancer Etiology/DH Garabrant/$49,840 (annually)/4-1-87 through 3-30-92/ priority score 145, funds pending.

As co-principal investigator/co-investigator

1. Union Oil Company/Mortality Study of Geothermal Workers Exosed to Arsenic/JM Peters/$7926/4-1-82 through 3-31-83.

2. NIOSH/#210-81-5014/Health Hazard Evaluation of US Borax, Boron, California/ JM Peters/$98098/10-1-81 through 3-31-83.

3. NIOSH/UC Irvine ERC Subcontract/Residency Program in Occupational Medicine/ JM Peters /$90,890 (annually)/7-1-84 through 6-30-89.

4. NCI/CA36501/Case-Control Study of Colon Carcinoma/RK Peters/$178458 (annually)/7-1-84 through 6-30-89.

5. NCI/CA17054/USC Cancer Center Epidemiology and Biostatistics Unit/Brian E. Henderson/$1,370,281 (annually)/1-1-75 through 3-31-87.

6. ACS/SIG 2/Cancer Cause and Prevention Research/BE Henderson/$1,000,000/ 1-1-81 through 12-31-85.

Bibliography

Full Length papers in Peer-Reviewed Journals

1. Peters JM, Wright WE, Garabrant DH. Occupational epidemiology: detection of cancer in the workplace. West J Med 1982; 137:555-559.

2. Bernstein RS, Sorenson WG, Garabrant DH, Reaux I, Keough B, Hunninghake G, Treitman M. Exposures to respirable airborne penicillium from a contaminated ventilation system: clinical, environmental, and epidemiological aspects. Am Indus Hygiene Assoc J 1983; 44:161-169.

3. Garabrant DH, Peters JM, Bernstein L, Mack TM. Job activity and colon cancer risk. Am J Epidemiol 1984; 119:1005-1014.

4. Garabrant DH, Peters JM, Bernstein L, Smith T, Wright WE. Respiratory and eye irritation from boron oxide and boric acid dusts. J Occup Med 1984; 26:584-586.

5. Garabrant DH, Wegman DH. Cancer mortality among shoe and leather workers in Massachusetts. Am J Indust Med 1984; 5:303-314.

6. Garabrant DH, Peters JM, Bernstein L, Smith T, Wright WE. Respiratory effects of borax dust. Brit J Indust Med 1985; 42:831-837.

7. Garabrant DH. Dermatitis to an aziridine hardening agent used in water based printing ink. Contact Dermatitis 1985; 12:209-212.

8. Peters JM, Garabrant DH, Wright WE, Bernstein L, Mack TM. Uses of a cancer registry to assess occupational cancer risks. National Cancer Institute Monograph 1985; 69:157-161.

9. Osorio AM, Bernstsin L, Garabrant DH, Peters JM. Investigation of lung cancer among female cosmetologists. J Occup Med 1986; 28:291-295.

10. Froines JR, Garabrant DH. Quantitative evaluation of manicurists exposure to methyl, ethyl, and isobutyl methacrylate during production of synthetic fingernails. App Indust Hyg 1986; 1:70-74.

Papers Submitted

1. Wright W, Bernstein L, Peters JM, Garabrant DH, Mack TM. Adenocarcinoma of the stomach and exposure to occupational particulates.

2. Garabrant DH, Fine LJ, Oliver C, Bernstein L, Peters JM. Abnormalities of pulmonary function and pleural disease among titanium metal production workers.

3. Kawamoto MM, Garabrant DH, Balmes JR, Dimick JR, Simonowitz JA, Held J, Bernstein L. Respiratory effects of cotton dust exposure in the cotton garnetting industry.

Papers in Preparation

1. Uba G, Pachorek D, Bernstein J, Garabrant DH, Wright WE, Balmes JR. Acute respiratory effects of formaldehyde exposure in anatomy laboratory.

2. Garabrant DH, Held JH, Langholz B, Bernstein L. Mortality study of aircraft manufacturing workers.

3. Garabrant DH, Bernstein L, Held JH, Peters JM. Case-control study of central nervous system tumors among workers in the aircraft industry.

4. Garabrant DH, Froines JR. Acute pulmonary irritation due to methylmethacrylate vapor.

5. Barone JA, Peters JM, Garabrant DH. Cigarette smoking as a factor in noise induced hearing loss.

6. Peters JM, Garabrant DH. Carcinogenicity of trichloroethylene: a critical appraisal.

Chapter

1. Garabrant DH, Olin R. Carcinogens and cancer risks in the microelectronics industry. In: LaDou J (ed), State of the Art Reviews; Occupational Medicine. Vol 1, No 1, January-March, 1986. Hanley and Belfus, Inc, Philadelphia, pp 119-134.

Miscellany

1. Mosely C, Garabrant D, Fine L. Health Evaluation Report 79-17-751, RMI Metals Reduction Plant. U.S. Department of Health and Human Services, Center for Disease Control, National Institute for Occupational Safety and Health, Cincinnati, OH, 1979.

2. Garabrant DH, Peters JM, Bernstein L, Smith T, Wright WE. US Borax and Chemical Corporation, Boron, California: Health Hazard Evaluation. Final Report. National Institute of Occupational Safety and Health, Cincinnati, OH, 1983.

3. Kawamoto MM, Garabrant DH, Balmes JR, Dimick JR, Simonowitz JA, Held J, Bernstein L. Respiratory effects of cotton dust exposure in the cotton garnetting industry. I. Epidemiological study. Health Hazard Evaluation. Special Studies Unit, Division of Occupational Safety and Health, Department of Industrial Relations, State of California, Sacramento, CA, 1985.

Papers Presented at Scientific Meetings (contributed)

1. "Pulmonary disease in borax workers." Annual meeting of the Western Occupational Medical Association, San Francisco, CA, 1982.

2. "Respiratory symptoms from borax and boric acid aerosols." 4th Annual Rocky Mountain Conference on Occupational and Environmental Health. Park City, UT, 1982.

3. "Occupational cancer". American Occupational Medical Association Annual meeting. Los Angeles, CA, 1984.

4. "Epidemiology of occupational cancer". Stanford University - Western Occupational Medical Association Conference, Palo Alto, CA, 1985.

5. "Cancer mortality in the aircraft manufacturing industry." V International Symposium, Epidemiology in Occupational Health. Los Angeles, CA, 1986.

Invited Papers and Seminars

1. "Colon Cancer and Job Activity". Invited Paper at Occupational Epidemiology Forum, sponsored by USC, UCLA, and UC Irvine Schools of Medicine. Irvine, CA, 1983.

2. "Respiratory Effects of Borax Dust". Invited Paper at Occupational Epidemiology Forum, sponsored by USC, UCLA, and UC Irvine Schools of Medicine, Irvine, CA, 1984.

3. Panel Chairman. "Health Issues for Women in the Workplace". Annual Scientific Meeting, American Occupational Medical Association, Los Angeles, CA, 1984.

4. "Occupational Cancer". Postgraduate Education Conference at the American Occupational Medical Association Basic Curriculum Course, Salt Lake City, UT, 1984.

5. "Contact Dermatitis from Aziridine Hardener in Printing Ink". Invited Paper at Occupational Epidemiology Forum, sponsored by USC, UCLA, and UC Irvine Schools of Medicine, Irvine, CA, 1985.

6. "Epidemiology for the Occupational Physician". Postgraduate Education Conference at the Annual Scientific Meeting, American Occupational Medical Association, Los Angeles, CA, 1984.

7. "Cancer Mortality in the Aircraft Manufacturing Industry". Invited Paper at Occupational Epidemiology Forum, sponsored by USC, UCLA, and UC Irvine Schools of Medicine, Irvine, CA, 1986.

8. "Toxicology". Workshop on evaluation of workers compensation patients exposed to hazardous chemicals. Postgraduate Education Conference. Presented by the State of California Division of Industrial Accidents and USC School of Medicine, Los Angeles, CA, 1985.