LESTER AND SHERRICE BARRETT	NO. B-150,698
VS.	IN THE DISTRICT COURT OF
MOBIL OIL CORPORATION, ET AL.	JEFFERSON COUNTY, TEXAS
	60TH JUDICIAL DISTRICT

DEPOSITION OF
OTTO WONG Sc.D., F.A.C.E.

On **October 8, 1997**, the oral deposition of the Witness in the above-styled cause was taken at the instance of the Plaintiffs at the Airport Hilton Hotel in San Francisco, California, pursuant to Stipulations of Counsel contained herein.

Those persons present were as follows:
MR. J. KEITH HYDE
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6 EXAMINATION BY MR. HYDE 6

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DEPOSITION OF OTTO WONG, Sc.D., F.A.C.E.

October 8, 1997

MR. HYDE: Same stipulations as yesterday?
MR. COLBERT: Yes.

OTTO WONG Sc.D., F.A.C.E.
having been duly sworn, testified as follows, to-wit:

EXAMINATION BY MR. HYDE:
Q Good morning. Would you please state your name.
A Otto Wong.
Q What is your home address?
A 20 Santa Felicia Court. S-a-n-t-a F-e-1-i-c-i-a, Court; Burlingame, B-u-r-l-i-n-g-a-m-e, California 94010.
Q Your home telephone number?
A 650-572-1888.
Q And what is your business address?
A 181 Second Avenue, Suite 628 San Mateo, S-a-n space M-a-t-e-o, California 94401
Q What is your business telephone number?
A 650-347-7898.
Q You are employed by Applied Health Sciences, Inc.; is that correct?
A Yes.

Q What is your position with that company?
A Basically I own the company.
Q You are president and chief epidemiologist; is that correct?
A Yes.
Q How many employees work for Applied Health Sciences, Inc.?
A I am the only full-time employee there.
Q Dr. Wong, what is your age?
A Do I have to answer that?
Q Yes. I'm just curious.
A Almost 50. Not quite. I cannot ask you questions, right?
MR. HYDE: Mark that as No. 1.
(WHEREUPON, WONG EXHIBIT NO. 1 WAS MARKED FOR IDENTIFICATION PURPOSES. SAME WILL BE FOUND IN AN EXHIBIT VOLUME ATTENDANT TO THIS DEPOSITION.)
(By Mr. Hyde)
Q Dr. Wong, did you have an opportunity to review your deposition Notice?
A Yes, I have.
Q I see that you have brought with you two boxes of documents; is that correct?

A Yes.
Q In front of you there are two folders that contain the principal documents upon which you will base your opinions in this matter; is that true?
A Well, I think a better way to describe them is the two folders in front of me consist of my so-called project file as well as scientific documents and reports that I relied on in this case. The rest of the materials in the two boxes are materials provided to me by the attorneys.
Q What we'll do is we are going to mark the documents in those two folders right there not individually but more in groups. The Court Reporter will return the originals back to you; and we will use the copies as exhibits, okay?
A That would be fine for me.
MR. HYDE: Why don't we take one second and let the Court Reporter just mark this folder as 1 and so forth and so on. We'll mark those probably as Exhibit 4 and then if we need to mark A, B, and C, we'll do that later. Let's go off the record.
(WHEREUPON, WONG EXHIBIT NOS. 2, 3, AND 4 WERE MARKED FOR

IDENTIFICATION PURPOSES. SAME WILL BE
FOUND IN AN EXHIBIT VOLUME ATTENDANT
TO THIS DEPOSITION.)
(By Mr. Hyde)
Q Dr. Wong, would you please identify the documents contained in the folder which has been marked as Wong Exhibit No. 2.
A Okay. That is my so-called project folder. That would include correspondence, a copy of my CV, and so on.
Q Would you identify the documents which have been marked as Exhibit 3.
A In Exhibit 3 I have three reports, and they are reports of the Mobil Beaumont refinery.
MR. HYDE: Why don't we re-mark these individually as 3, 3A, and 3B.
(WHEREUPON, WONG EXHIBIT NOS. 3, 3A, AND 3B WERE MARKED FOR IDENTIFICATION PURPOSES. SAME WILL BE FOUND IN AN EXHIBIT VOLUME ATTENDANT TO THIS DEPOSITION.)
(By Mr. Hyde)
Q We have modified our exhibit marking technique so that now Exhibit 3 is the first document in your pile of three documents. Would you identify

the document which has been marked as Exhibit 3.
A 3 is the final revised manuscript of our paper on the Beaumont refinery that we have submitted to the American Journal of Industrial Medicine.
Q What is the date of that document, Dr. Wong?
A July 14, 1997.
Q Would you identify the document which has been marked as Exhibit 3A.
A 3A is a report on the same study - a Mobil internal report dated December 5th, 1994.
Q Would you identify the document which has been marked as Exhibit 3B.
A 3B is the report for the same refinery," but based on earlier data; and the date of the report is April 10th, 1994.
Q The documents marked as 3, 3A, and 3B are all documents that in part form the basis of your opinions in this lawsuit; is that correct?
A Part of, yes.
Q Would you identify in a general nature the documents which are contained in Exhibit 4, not individually but just generally speaking.
A These are the scientific studies that I have reviewed, and I'm going to rely on them for this

case. And basically they address the issue of the relationship between exposure to benzene and non-Hodgkin's lymphoma as well as exposure to butadiene and non-Hodgkin's lymphoma.
Q Are there any other documents other than the references in Exhibit 4 and the three studies which have been marked 3, 3A, and 3B on which you base your opinions in this lawsuit? Are there any specific documents?
A These would be the specific documents; but then if I'm asked in question, for example, on general concepts of epidemiology, I may have to answer you and, you know, refer to a textbook or something. But as far as my opinions are concerned, at this point, yes, these are the documents.
Q You have had an opportunity to look at your Notice, Exhibit 1; and you have brought all the . documents that are responsive to the Subpoena Duces Tecum; is that correct?
A Yes.
Q Dr. Wong, if I ask you a question that you don't understand, will you tell me that so I can rephrase my question?
A I will.
Q If at any time you'd like to take a break

for whatever reason, we will take a break. Is that agreeable to you?
A Sure.
Q Do you understand that for each question that I ask you that the answer that you give you are under oath to tell the truth?
A Yes.
Q Dr. Wong, what did you do to prepare yourself for today's deposition?
A You mean within the last couple of days or --
Q Yes, sir.
A --- do you mean the last couple of months?
Q Let's start with the last few days.
A Basically I organize all the papers that I bring with me - the scientific documents. I went back and review some of the case material, some of the basic facts of the case; and also I went back and refreshed my memory on some of my own studies. I'm sure you will ask some questions on things that I have done 10, 20 years ago; so, I don't want you to -- Basically I just want to get myself, you know, familiar with the documents. Well, also, I have a meeting with Kevin this morning.
Q When were you first contacted to be an expert witness in this lawsuit involving Mr. Barrett?

A Several months ago. Let me give you the precise date. Is probably sometime either early August 1997 or late July because the earliest correspondence I have in my file is dated August 13th. We have -- I think I have phone conversation with Kevin before that, and subsequently he send me some materials to read.
Q What did he tell you about the nature of this lawsuit when he first contacted you?
A Basically he gave me some facts of the case, you know, the disease or the chemicals of interest and so on.
Q Did any other lawyers contact you other than Mr. Colbert relative to this lawsuit?
A Subsequently Richard Faulk also talked to me.
Q Did either Mr. Faulk or Mr. Colbert come out to San Francisco concerning this case?
A No, but last week I had a meeting with them in Houston.
Q Who else was present in that meeting other than you, Mr. Colbert, and Mr. Faulk?
A No one.
Q The meeting occurred down at the law offices where Mr. Colbert and Mr. Faulk work; is that

correct?
A Yes.
Q How long did you-all meet?
A We started a little bit after 9:00 o'clock;
and-I think we finished our meeting a little bit
after noon - noontime.
Q Have you reviewed any of your prior
depositions or testimony in preparation for today's
deposition?
A No, I have not.
Q I think you indicated that you had some of
the medical records of Mr. Barrett. They were
provided to you; is that correct?
A Not provided by Barrett, but -- I think if
question is --
Q Let me rephrase it.
You have had an opportunity to review
Mr. Barrett's medical records; is that correct?
A Yes, I have.
Q What is your understanding of the type of
cancer that Mr. Barrett has?
A The diagnosis is in a general category of
non-Hodgkin's lymphoma, but also more specifically is
a gastric lymphoma.
Q As we sit here today you have no quarrel

with that diagnosis, correct?
A That is not my area of expertise. I would just have to accept that.
Q What did the lawyers for Mobil ask you to do with respect to this lawsuit?
A When you say, "lawyers for Mobil," you mean Mr. Colbert and Mr. Faulk?
Q Yes, sir.
A Basically they asked me to look at the scientific literature to determine whether there is a relationship - a causal relationship between exposure to benzene and non-Hodgkin's lymphoma or whether there is a relationship between exposure to butadiene and non-Hodgkin's lymphoma.
Q Have you provided them with any type of report in this lawsuit?
A Yes, I have.
Q May I see a copy of the report, please?
A (Tendering)
Q When did you complete the report in this lawsuit? (Tendering)
A (Reviewing document) The date October 1st, 1997.
Q Prior to your completing your report, did you have a draft of that report?

A Yes, I had.
Q And did you discuss your draft report with either Mr. Colbert or Mr. Faulk?
A Yes, we did.
Q Did they suggest any changes to your draft report?
A The only changes that we made was to fit into what you call a legal format. The first couple of paragraphs, you know, all this legal stuff - that was based on their suggestions.
Q Any other changes to the body or the conclusions in your report?
A No.
Q Dr. Wong, how many hours have you spent working on this matter, this lawsuit, as an expert?
A In August I probably spend two or three days reviewing the materials that they sent me. In September, again I probably spent a couple of days reviewing materials that they send me and also reviewing some scientific papers and so on. Plus, also, I went down to Houston in late September.
Q So, it would be another two days?
A Yeah, probably two days.
Q And then how about in October? How many days did you spend in October?

A October I would say two or three days again.
Q So, would it be fair to say - and I've kind of added this up - that you have spent approximately 8 to 11 days working on this case?
A Probably in that range.
Q From a day standpoint, are you typically talking 8 hours per day; or are you talking more than that or less than that?
A The equivalent of 8 hours, yes.
Q As we sit here today, your time in this lawsuit excluding today is somewhere between 64 and 88 hours. Does that sound about right?
A Probably so, yeah.
Q Now, when you are performing research he investigating facts associated with a lawsuit, what is your customary charge?
A I'm not sure I understand you.
Q What do you charge the lawyers who represent Mobil for your time during the research phase of your work in a lawsuit?
A "Research phase" meaning reading the background materials, reading papers, and so on?
Q Yes?
A 380 an hour.

Q What do you charge for the time when you are giving testimony either in deposition or at trial?
A The same.
Q Have you had an opportunity to speak with any of the other witnesses retained by Mobil's lawyers in this lawsuit?
A You know that I have an ongoing working relationship with Mobil and their Director of Epidemiology is Dr. Gerry .Raabe; so, I talk to him from time to time.
Q Have you had an opportunity to speak with any of the expert witnesses retained by Mobil other than Dr. Gerry Raabe?
A No.
MR. COLBERT: That's if, in fact, Otto understands who Mobil has retained in this case.
MR. HYDE: Right.
(By Mr. Hyde)
Q Now, my understanding is that you have had an ongoing relationship with Mobil for 12, 15 years. Is that about right? Or has it been longer?
A Ongoing working relationship with Mobil?
Q Yes. And let me rephrase it. I don't mean

to insinuate anything else.
It is my understanding that you, Dr. Wong, have had an ongoing working relationship with Mobil for 12 to 15 years or longer. Is that correct?
A Yes.
Q I take it that you have had an opportunity to review Dr. Raabe's deposition that we took a week or so ago in Virginia; is that correct?
A Yes. I enjoyed reading that.
MR. COLBERT: I want to ask which parts he liked the best.
MR. HYDE: No telling.
THE WITNESS: I'm sure we will get to the details later on today around 4:00 o'clock when you're trying to get out of here and go back to the airport.
(By Mr. Hyde)
Q Have you ever been a member of the American Conference of Governmental Industrial Hygienists?
A No.
Q Have you ever had an opportunity to consult with the American Conference of Governmental Industrial Hygienists - the organization?
A Yeah, when you say, "consult," I'm not sure

I understand what you mean by that.
Q Work for them as an expert or as a consultant.
A No.
Q Have you ever written any articles for the publication published by the American Conference of Governmental Industrial Hygienists? I believe it's Applied Industrial Hygiene. Have you ever written any articles in that journal?
A I don't even know that they have a journal.
Q Now, you have in one capacity or another been working with the API off and on for 20 or so years. Is that about right?
A I'm not that old. I think I started working on some API projects in the early Eighties, and the last work that I had with the API was back in 1993 or 1994. I haven't worked for them in a while.
Q When you were with Tabershaw, did you not have some projects with --
A Yes, that's why I --
Q --- the API?
A Yes. That's why I refer to early Eighties.
Q Is it fair to say you have worked on several epidemiological projects with the American Petroleum Institute; is that correct?

A Yes.
Q The last one was the American Petroleum Institute study involving transportation or distribution work; is that correct?
A Yes.
Q They retained you to conduct the study; is that correct - the API?
A Yeah, actually the project had two components. The epidemiology component - I was in charge of that; and there was another component called the industrial hygiene or exposure assessment component. That component was headed by Professor Tom Smith at Harvard University.
Q Approximately how much in round numbers did you charge the API for your work on the last study that you conducted?
A I don't recall the exact number. We started that project -- We must have started that in the mid-Eighties. We started a feasibility study first to find out whether a study can be done at all, whether the study is feasible at all. That went on for about a year. Then after that we submit a proposal to do the cohort study, which took must be five or six years. Then after that was concluded we did a nested case control study for another couple of

years. I just don't recall all the numbers.
Q We are talking in the general range of 2 to 300,000 at least, aren't we, for that study - your part?
A Oh, I think more than that.
Q You also have worked through the years for the Chemical Manufacturers Association as a consultant or a researcher?
A Yes.
Q One of the studies that you conducted was a benzene epidemiological study of certain Chemical Manufacturers Association member companies' plants; is that correct?
A Right. That was probably in the early. 1980's.
Q At that time I think you were working for a different company - is that correct - when you performed the work for the Chemical Manufacturers Association?
A The project started when I was working for Dr. Tabershaw back in Washington, D.C.; and subsequently I move out to California and worked for a company called in Environmental Health Associates and the benzene project follow me to California. So, in essence the project started at Tabershaw, but I

finished the project at Environmental Health Associates.
Q For the CMA benzene project, you were the chief researcher, correct?
A Yes.
Q The CMA paid Environmental Health Associates, again, several hundred thousand dollars, correct?
A It may not be that much.
Q If you had to give a range, what are you talking about? 150- to 300-? Would that be a fair estimate?
A Probably around 100-, because we had already done some work before the project came to Environmental Health Associates.
Q Now, I know that you have had this ongoing relationship with Mobil and I think Dr. Raabe . testified that on an annual basis he typically, through Mobil, compensates you approximately $30,000 a year. Does that sound about right?
A Maybe less. I think he exaggerate things a little bit.
Q That makes two of us.
MR. COLBERT: I object to sidebar.

(By Mr. Hyde)
Q Would 20- to 30,000 be an appropriate range as it relates to your work with Mobil over the last number of years?
A I think it goes up and down a little bit, but within the last five or six years I really did not have any major project with Mobil. So, most of the time I would be just doing some consulting work or review a paper for them, make some suggestions for the analysis and so on. So, that kind of activities did not add up to a lot of hours; so, I would say no more than 30 percent and much lower than that number.
Q Have you consulted with Exxon in your career as an epidemiologist? I'm not talking about you working for Environmental Health Associates or you working for Tabershaw. In your work with Applied Health Sciences have you consulted with Exxon?
A Not that I know of. When I say that, certainly I don't have any projects with them.
Q That's what I'm --
A Research projects.
Q I'm either referring to a specific research project or some relationship with a company such that they call you and say, "Dr. Wong, we'd like for you to look at this or look at that."

This is what I'm talking about in this line of questions, okay?
A Okay.
Q Have you had any business relationship with Texaco over the last ten years?
A No.
Q Have you had any business relationship with Shell Oil?
A I think around ten years ago we might have looked at some data or some old study that Shell had or --
Q Do you recall if it involved either the Wood River Refinery or the Shell Deer Park refinery?
A No. I think it's some kind of agricultural chemical plant. We simply looked at whether the study can be done or not at that time. We didn't do any studies per se.
Q Have you had any kind of consulting relationship with Chevron?
A Yes, I have.
Q Has that been an ongoing relationship over the years?
A Yes.
Q Typically around how much compensation do you receive on an annual basis from Chevron?

A Over the last few years one of the larger projects that I did for them was to participate in their Port Arthur refinery update. I think for that year the compensation probably is around - was around 10,000 or maybe less; and for the other years, probably less than that.
Q I take it that the Chevron employee that you have most contact with would be Will Bailey.
A I would say both Will Bailey as well as Ken Satin, S-a-t-i-n.
Q Have you had any business relationships as a consultant with Unocal, Union Oil of California?
A I can remember one occasion.
Q What was the nature of that project?
A It's either a year ago or two years ago I was contacted to look at a study on Unocal employees, and the study was done by Dr. Phil Cole's group at University of Alabama. I reviewed the report submitted to Unocal by Dr. Cole's group and also a subsequent publication of the same study; and I think in that publication as well as in the report there was a recommendation to some additional - to do some additional studies and so on. Basically I was asked to look at some of the data and see whether indeed they can do a study.

Q Approximately what level of compensation did you have or did you receive from Unocal?
A oh, maybe two or three thousand dollars.
Q Have you had any business relationships with Phillips Petroleum?
A No.
Q Have you had any business relationships with Atlantic Richfield, or Arco?
A No.
Q Have you had any business relationships with Monsanto?
A No.
Q Have you had any business relationships with Dow?
A No.
- Q Have you had any business relationships with Upjohn?
A No.
Q Have you had any business relationships with Lyondell Petrochemical?
A No.
Q Are there any other oil or chemical companies with which you have a consulting relationship at this time as we speak other than Mobil?

A No. Let me clarify on the Upjohn the issue. Several years ago I did a study on ethylene oxide for an industrial association - the Health Industry Manufacturers Association. I believe Upjohn is a member of that association; so, that may be an indirect kind of working relationship.
Q Thank you.
Back to my last question. As we sit here today, do you have any continuing, current business , relationships with any oil and chemical companies other than the ones we have already spoken about?
A I think basically you named all the companies.
Q I asked the Witness yesterday if he had a list of appearances that he's made by way of deposition or trial testimony. He informed me that it was Federal Rule 26. Do you have such a document prepared whereby you have on a list your appearances in lawsuits either by way of deposition testimony or trial testimony?
A No, I don't.
Q Now, I know that you were deposed in a case that I worked on involving five City Service employees who had non-Hodgkin's lymphoma, and I took your deposition originally in San Francisco in

approximately 1991. Do you recall that in a general sense?
A I remember seeing you someplace. I don't remember 1991 or the specific case.
Q Approximately how many times have you given your deposition?
A I don't keep track of that. I would say on the average it's probably about anywhere between five to eight or ten a year. It depends. It fluctuates from year to year.
Q You have been testifying as an expert witness since sometime in the late 1980's, approximately 1988 or '89 or somewhere around then; is that correct?
A I probably started around mid-1980's, and in those early years I think the average was probably lower. .
Q Two to three times?
A Probably two or three times, yes.
Q Per year. It would probably be fair to say that you have been deposed somewhere in the range of 60 times; is that a fair estimate?
A Yeah.
Q How many times have you given trial testimony?

A You mean testify in court?
Q In court, yes, sir.
A Again, I don't keep track of the number;
but sometimes, for a year, sometimes is once or twice
a year. That's the best estimate I can give to you.
Q Would it be fair to say that you have given
trial testimony somewhere between 10 and 20 times?
A reasonable estimate.
Q How many times have you been retained by
Mr. Colbert or Mr. Faulk with respect to a lawsuit
either when they worked for Gardere & Wynne or part
of Gardere & Wynne or part of the Akin, Gump, law
firm or in any other capacity as lawyers?
A I would think maybe two or three times.
Actually I can only recall one other occasion; but it
seems that I have known those two guys for a long,
long time. So, I would say maybe two or three times.
Q What was. the last case in which you gave
testimony in a matter in which Mr. Faulk or
Mr. Colbert represented a defendant in a lawsuit?
A I don't think I did. I just don't recall
any.
Q I believe you have testified as an expert
on behalf of lawyers who represented most, if not
all, of the oil companies, correct, who are

defendants in lawsuits. Is that a fair statement?
A Can I have that question back again?
Q Yes, sir. In your work as an expert witness you, over the years, have testified or been called to testify for lawyers who represent most of the oil companies and chemical companies that are major oil and chemical companies. That's a fair statement, isn't it?
A I would think it's a fair statement because most of my work is in occupational epidemiology, and I have done a lot of studies on petroleum workers.
Q In other words, though you may not know all the defendants in a lawsuit, you have worked on cases where Shell, Chevron, Unocal, and others were defendants; but yet you might be just being paid by the lawyers who represent those oil and chemical company defendants? That's true, isn't it, from what you know?
A I'm not sure I understand the question.
Q Okay.
A I don't know all the defendants most of the time, and I don't know all the people who retained me. I usually work with one group or at least a couple of people.
Q Typically you understand that those lawyers

represent various oil companies who are defendants in a lawsuit; is that correct?
A Yes.
Q Now, have you ever testified on behalf of attorneys who represent injured workers?
A I work for plaintiff attorneys on a number of occasions. I guess one case you can call -- I don't know whether you call it injured worker or not, but the plaintiff was exposed to some cleaning solvents and got some reaction and I work on that case.
Q Would it be fair to say that probably 95 percent of your work as an expert witness is on behalf of defendants?
A Yeah. I think it's a fair statement. I'm still waiting for you to call me.
MR. HYDE: I've got to object to that last part of that.
(By Mr. Hyde)
Q From a revenue standpoint for your business, is the greater percentage of your revenue generated from being an expert witness as compared to consulting on studies?
A No. Absolutely not because when you are talking about working for attorneys, you are talking

about a very small amount of-time, you know - a few hours here and there. Maybe if you have meetings and depositions, that may go up to a couple of days. But on major projects you are talking about doing a project over several years; so, the budget for research projects is much bigger.
Q Let's take 1996, for example. Did a majority of your income come from consulting and epidemiological projects, or did a majority of your income come from consulting with lawyers?
A I think I understand your question; but I would prefer you doing epidemiological projects rather than consulting on epidemiological projects because, you know, in those projects --
Q I can rephrase it that way. Okay.
For 1996 did a majority of your revenue come from doing epidemiological projects, or did a majority of your revenue come from consulting with lawyers?
A From doing studies.
Q In what studies are you currently involved?
A I have a major project, both a cohort as well as a nested case control study of workers exposed to man-made mineral fibers. I have a --
Q Do you have another project?

A I hope so. I have more than one or two projects
Q Do you have another project that's currently being conducted other than the one project dealing with man-made fibers?
A Yes.
Q What is the other project?
A I'm also doing a project for National Stone Association on workers exposed to rock dust silica. That's a huge project. I'm doing a study for the. International Lead and Zinc Research Organization on a project of workers exposed to lead. I'm doing a large cohort study of pulp and paper mill workers. There's still a couple. I can't think of them. I'm doing quite a few studies at this point.
Q Okay. Both the cohort study and the nested case control study concerning man-made fibers - who has retained you to perform that study?
A I'm doing that for USG.
Q United States Gypsum?
A Their official name is USG, and I have, known them all the time as 11USG.11 I don't know whether that was their previous name or what.
Q So, the manufacturer of the man-made fiber material has retained you to conduct this study; is

that correct?
A Yes.
Q Then the trade association known as the
National Stone Association has retained you to do a
study on rock dust?
A Yes.
Q The International Lead and Zinc Research
Association, another trade association, has retained
you to conduct a study concerning workers' exposure
to lead; is that correct?
A Yes.
.Q Who has retained you to conduct a study on
pulp and paper mill workers?
A Mead, M-e-a-d.
Q The company called Mead?
A Yeah, paper product company.
Q I think they are a large paper mill and
paper products company. Is that right?
A Yes.
Q Dr. Wong, have you been retained in the
last ten years by any union to conduct an
epidemiological study of its members?
A I don't know whether it falls in the last
ten years or not. We did the study over a number of
years. It may overlap the ten years you talk about.

I did a study for -- I don't know exactly how you call it. I guess it's a trust, and it consists of both the management as well as the union. We did a study on heavy equipment operators, and we did a study on the union members.
Q Was that at General Motors or Ford or somebody like that? Do you recall?
A No. The cohort consisted of members belonging to this heavy equipment operators union.
Q Was it the union-that retained you as the consultant on the epidemiological study, or was it management and the union?
A I think it's some kind of joint activity between the management and the union.
Q Have you ever been retained by a union itself to conduct an epidemiologic study?
A No.
Q Dr. Wong, do you consider yourself to be a toxicologist?
A No, but I took a graduate class on toxicology I think -- Let me see how many years ago. I make a mistake of going back to school and compete with the 20-year-olds in 1992. I took a environmental toxicology course from University of California.

Q The bottom line is, though, you don't consider yourself to be a toxicologist by profession, do you?
A No.
Q Do you consider yourself to be an industrial hygienist by profession?
A No, but again, I took a lot of industrial hygiene classes when .I was in graduate school; so, we do have something in common you and I.
Q Well, we're both good-looking, right?
Well, we're the only two who thought so, I guess.
MR. COLBERT: I'm not going to get involved in that discussion.
(By Mr. Hyde)
Q Dr. Wong, do you consider yourself to be a medical doctor?
A No.
Q Do you have any specific training in the fields of oncology or hematology?
A No.
Q Over the years have you consulted with hematologists and oncologists concerning your work as an epidemiologist?
A Oh, I'm sure from time to time we have talked about diagnosis and classification, you know,

in a very general sense.
Q Can you identify any of the hematologists or oncologists who over the years you have worked with as it concerns classification of hematological disorders or malignancies?
A There is someone in town that I talk to once in a while. His name is Ralph Wallenstein.
Q Any others?
A That's a name that I can recall.
Q Dr. Wong, from a practical standpoint you have no expertise in maintenance or operations in refinery and chemical plants; is that correct?
A No.
Q Well, let me ask it this way, because we have a double-negative working there.
Do you have any expertise in refinery and chemical plant operations and maintenance?
A I don't think so.
Q Are you an engineer?
A No.
Q Are you a chemist?
A No.
Q Would it be fair to say that a majority of the cases in which you've been retained as an expert witness have involved exposure to benzene and

allegations of illness from exposure to benzene?
A I don't know whether it would qualify as a majority or what; but I would say, because of my previous work, it's very natural for people to contact me regarding benzene exposure.
MR. HYDE: I probably need to object to some portion of that answer.
.(By Mr. Hyde)
Q Have you been retained as an expert witness in any cases involving asbestos exposure and diseases associated with asbestos?
A Yes.
Q Have you been retained as an expert in any cases involving exposure to pesticides and diseases or conditions alleged to have been caused by pesticides?
A Yes.
Q Now, when you testify in cases involving asbestos I, again, believe that you have testified on behalf of asbestos manufacturers; is that correct?
A Most of the cases that I testify in relation to asbestos exposure were what we call friction product cases; so, the defendants that I worked for are not asbestos manufacturers per se, but basically they make friction products.

Q In other words, in the type of asbestos cases that you testify in, those involve manufacturers who manufacture a product that contained asbestos?
A That's true.
Q That's a majority of those types of asbestos cases, correct?
A Yes.
Q Now, for cases involving exposure to , pesticides, you have testified on behalf of the manufacturers of the pesticides; is that correct?
A Actually the case that I can think of now I worked for a railroad company. I assume they use pesticide, but they don't make pesticide.
Q The application of a pesticide?
A Exactly.
Q Have you ever testified on behalf of the manufacturers of pesticides?
A Yes, I have. I'm thinking of working for Dow Chemical and Shell in connection with DBCP down in Fresno County.
Q Was that not the chemical that was alleged to cause sterility in men? Is that one?
A Yeah, the reproductive effect is pretty clear; but the study down in Fresno was on cancer and

not on reproductive effect.
Q That was for Shell and Dow, correct?
A The study that I did in Fresno, the epidemiologic study itself was sponsored by Shell. After that I had testified, I guess, for both of them. They must jointly retain me. Sometimes they do, sometimes they don't. I don't keep track of that.
Q Does exposure to sufficient quantities of benzene cause cancer in workers exposed to the benzene?
A This is the first question you asked this morning that I have to think a little bit because you use the term "cancer" instead of specifying what kind of cancer. To some extent the answer to your general broad question is yes; but at the same time, I think we need to specify what kind of cancer we are talking about.
Q To the general question of does benzene cause cancer with sufficient levels of exposure, you answered "yes." But you would like for me to then break the phrase "cancer" into subcategories; is that correct?
A Be more specific because, you know, certainly if you make a statement or you ask me or I

make the statement saying that chemicals cause cancer, we are right. Nobody can fault that. But that's not very informative.
Q You, Dr. Wong, consider benzene to be a human carcinogen, correct?
A Yes.
Q You, Dr. Wong, consider benzene to be a leukemogen?
A Yes. I, Dr. Wong, consider benzene as a human leukemogen. .
Q Now, specifically with sufficient benzene exposure, benzene causes acute myelogenous leukemia, correct?
A Yes.
Q Have you ever testified on behalf of a plaintiff that benzene causes acute myelogenous leukemia?
A I'm still waiting for you to call me.
MR. HYDE: Off the record.
(AT THIS TIME A LUNCH RECESS WAS TAKEN. THEREFORE, AT 12:00 P.M. THE DEPOSITION WAS RECESSED AND AT 12:50 RESUMED AS FOLLOWS:)
MR. HYDE: Mark this as the next exhibit please

(WHEREUPON, WONG EXHIBIT N0. 5
WAS MARKED FOR IDENTIFICATION
PURPOSES. SAME WILL BE FOUND IN AN
EXHIBIT VOLUME ATTENDANT TO THIS
DEPOSITION.)
(By Mr. Hyde)
Q Dr. Wong, in going through your boxes we have identified a group of documents and we've had them marked as Exhibit 5. Would you identify generally what those documents are?
A These are scientific articles sent to me by the attorneys.
Q What do they deal with?
A They deal mostly with gastric lymphoma and its relationship to bacteria.
Q Prior to this lawsuit had you ever studied whether or not bacteria is a cause of non-Hodgkin's lymphoma, specifically gastric lymphoma?
A I wasn't aware of the specific papers; but in some general reviews of non-Hodgkin's lymphoma, there is usually some discussion on the viruses and bacteria and so on.
Q Also included in Exhibit 5 is Dr. Natelson's report relative to this lawsuit, correct?

A Yes.
Q Have you had an opportunity to speak with Dr. Natelson?
A No. -
Q - Have you had a specific conversation with Dr. Douglas Fowler concerning this lawsuit?
A No.
Q Before we took the break we were discussing benzene and the carcinogenicity of benzene. Do you recall those questions?
A Yes.
Q Do you believe a worker has a right to know that benzene is a human carcinogen?
A You are asking my personal opinion?
Q As a health professional, yes, sir.
A I would think so, yes.
Q You yourself would want to know if you were exposed to a material that was potentially harmful to you, be it in your water or your food or in the air you breathe, correct?
A Well, I mean, as a scientist certainly I would like to know. I like to know the specifics, you know, of what level of exposure, how firm is the conclusion and so on, yes.
Q You recognize that benzene causes aplastic

anemia, correct?
A At a very high level, yes.
Q You recognize that benzene causes certain blood dyscrasias, correct?
A You have to tell me what are you thinking about.
Q Well, blood dyscrasias in general. Does benzene cause blood dyscrasias?
A Again, if the exposure is high, we can see some, for example, depressed white blood cell counts certainly.
Q You recognize that benzene is harmful to the blood and the blood-forming organs, true?
A Again, we are referring to the same disease again?
Q Yes.
A Yes.
- Q What is non-Hodgkin's lymphoma?
A Non-Hodgkin's lymphoma is part of the broad category known as hemopoietic cancer. I don't know what else I can tell you.
Q It is a malignancy, correct?
A Oh, yes. A cancer, yes.
Q Does cigarette smoking cause non-Hodgkin's lymphoma?

A There are some studies reporting an increased risk of non-Hodgkin's lymphoma among smokers, but I haven't done a comprehensive search on that; so, I cannot give you a definitive answer.
Q As we sit here today, do we have any evidence that cigarette smoking is a cause of non-Hodgkin's lymphoma?
A Yes. I said there are some studies reporting an increased risk.
Q Well, are you equating increased risk with causation as it relates to cigarette smoking and non-Hodgkin's lymphoma?
A Not completely. In order to say there is a causal relationship, one of the basic requirements is you do have to have an increased risk. But that is just one piece of the whole causation analysis. What I'm trying to say is I know bits and pieces in the overall picture regarding smoking and non-Hodgkin's lymphoma. I have not done a comprehensive analysis.
Q As we sit here today; do you have an opinion that Mr. Barrett's non-Hodgkin's lymphoma was or was not caused by cigarette smoking?
A I cannot say for sure because I have not - Nobody has asked me to do any research on that. Based on my general knowledge, I've come across some

studies reporting an increased risk of non-Hodgkin's lymphoma among smokers; so, certainly there is a possibility, but I cannot say that for sure.
Q Okay. So, you recognize that there is a possibility that cigarette smoking may have caused or played a part in causing Mr. Barrett's non-Hodgkin's lymphoma. Is that a fair statement?
A I would think so, yes.
MR. HYDE: Mark that, please.
(WHEREUPON, WONG EXHIBIT NO. 6 WAS MARKED FOR IDENTIFICATION PURPOSES. SAME WILL BE FOUND IN AN EXHIBIT VOLUME ATTENDANT TO THIS DEPOSITION.)
(By Mr. Hyde)
Q From your documents that you have brought with you here today to the deposition we've taken one stapled group of documents and we've marked them as Exhibit 6. Do you see that?
A Yes.
Q Contained within Exhibit 6 is an article entitled "Increasing Incidence of Nori-Hodgkin's Lymphoma: Occupational and Environmental Factors," by Neil Pearce and Peter Bethwaite. You are familiar with that study, aren't

you, Dr. Wong?
A I'm actually not. I mean, they sent me this article.
Q Who sent you the article?
A The attorneys.
Q Okay. Let me show you --
A This is from my box, right?
MR. WIMBERLEY: Yes.
A So, it's part of my package that they sent me.
Q Did you have an opportunity to review these --
A Not every one of them because I think I should do my own research and not rely on the studies they send me.
Q Well, did you do any research in your work in this lawsuit concerning cigarette smoking being a cause of non-Hodgkin's lymphoma?
A No.
Q I'll draw your attention to this article "Increasing Incidence of Non-Hodgkin's Lymphoma: Occupational and Environmental Factors;" by Pearce and Bethwaite. The date of that is October 1st, 1992. On Page 54995 under "Other Lifestyle Factors" what does it state concerning cigarette smoking?
A Give me a couple of minutes to read it.

Q Yes, sir.
A (Reviewing document) Okay. Basically the authors said that they found one study which reported a nonsignificant association, meaning nonsignificant increase, between tobacco use and lymphomas. The reference that they gave here is No. 75 and I was going to look up what that reference is, but the page of reference is not there. I don't know exactly what reference it is.
Q The lawyers didn't provide you with the entire article with all the references; but they did provide you with the entire text of the article, correct?
A Yes.
Q Now, does it go on to say: "but there was no evidence of a dose-response relationship and most other studies of tobacco and non-Hodgkin's lymphoma have found no associationt1?
That's a correct reading, isn't it?
A Yes.
Q Do you have any reason to disagree with that summary based on your own personal knowledge?
A Just based on -- As I told you, I did not do a specific analysis or review on the relationship as between non-Hodgkin's lymphoma and smoking for thl5

case; but over the years, I'm aware of a number of studies which reported an increase and certainly more than one study. So, what I'm trying to say is I don't know how complete that review is.
Q It may be complete as far as you know, correct?
A No, no, no. It cannot be complete because I'm aware of more than one study. They only reference one study; and I'm aware of more than one already, even though I have not done a systematic search.
Q In all of the articles that you have in front of you or in your boxes, can you point me to one study that shows a statistically significant increase in individuals who smoke as it concerns non-Hodgkin's lymphoma and specifically indicating that cigarette smoking causes non-Hodgkin's lymphoma?
A (Reviewing documents) Okay. Here's one study.
Q Would you read me the title of that study.
A "Smoking and Risk of Non-Hodgkin's Lymphoma and Multiple Myeloma.11
I can point you to the table.
Q Show me the table.
A Okay. We are talking -- We are looking at

Table 1 in the article, and we are looking at a column under "ALL LYMPHOMA."
Q Would "ALL LYMPHOMA" not also include Hodgkin's lymphoma?
A Not in this paper because in this paper they are specifically talking about non-Hodgkin's lymphoma and multiple myeloma. I agree with you there is some confusion. Sometimes when people say,))lymphoma)) they mean the overall broad category including Hodgkin's disease as well. I don't think in this case in this paper --
Q Show me --
A Anyway I'm trying to point out to you that the relative risk for tobacco user in this study was 1.4 and confidence interval is from 1.1 to 1.8; so, statistically speaking it's significant.
Q Okay. But the odds ratio of the relative risk was 1.4; is that correct?
A Yes.
Q Do you know of any study that states or stands for the proposition that smoking causes non-Hodgkin's lymphoma where the odds ratio or the relative risk or the SMR is greater than 2 and the lower boundary of the confidence interval is greater than 1?

A I just want to point out this is a different*question than the one you asked before. The one that you asked me before was do I know of any study reporting a specific increase of non-Hodgkin's lymphoma in smokers; and that study we just looked at did exactly that, okay? The question you are asking me now is you put another restriction on the magnitude of the ratio of relative risk. It's a better question.
. Q Answer my last question. Do you know of any study that has an odds ratio, a relative risk, or an SMR of greater than 2.0 with a lower level of the confidence interval being greater than 1 that would support any opinion you have concerning cigarette smoking causing non-Hodgkin's lymphoma?
A Whoever is teaching you epidemiology, he or she is doing a pretty good job.
Q Thank you.
MR. COLBERT: And the Supreme Court of Texas thanks you, also.
A (Reviewing documents) There is another study that I have in the pile, but the odds ratio is below 2.
Q In the article that you've referred me to concerning smoking and risk of non-Hodgkin's lymphoma

and multiple myeloma, in the conclusion on Page 54 it states: "In conclusion this case-controlled study of non-Hodgkin's lymphoma revealed small increases in risk associated with cigarette smoking for all lymphoma and larger increases for the subtypes of high-grade and unclassified lymphoma."
That's a correct reading, isn't it?
A Yes.
Q It furthers states:. "Risk for all non-Hodgkin's lymphoma subtypes were elevated for users of cigars or pipes and smokeless tobacco only."
Do you know whether or not Mr. Barrett used cigars, pipes, or smokeless tobacco?
A I don't know one way or the other.
Q Okay, sir.
It goes on to say: Thus the findings from this study can be interpreted as confirming the .lack of an association between smoking and multiple myeloma and providing some support for an association between tobacco use and non-Hodgkin's lymphoma. That is a correct reading, isn't it?
A Yes.
Q It does not say smoking causes non-Hodgkin's lymphoma, does it?
A It -- The authors did not make a firm

conclusion. What they are saying is there is some indication for that, but based on their study they would not be able to make a very definitive statement.
Q Would a relative risk of 1.4 in your mind at least indicate the possibility that smoking may cause non-Hodgkin's lymphoma?
A I guess it depends on what your definition of "may" --
Q Possibly cause.
A Possibly?
Q Yes.
A Again, I mean, I don't understand the definition of "possibly." Let me say this.
Q Let's look at it this way. Some things are never possible. Some things are possible. Some things are probable. And some things are definite in life, correct?
A You are being philosophical now.
Q I am being philosophical, but do you agree with that?
A Okay. I agree with you.
Q I'm not asking you whether or not a 1.4 odds ratio stands for the proposition that cigarette smoking causes non-Hodgkin's lymphoma because we have

already established that what that means to you is
that it is a risk factor or an association, correct?
A Yes.
Q When something is a risk factor or an
association, in your mind does that then conclude
that there is a possibility that a chemical or a
cigarette or an activity may cause an end result such
as non-Hodgkin's lymphoma?
A I think your statement is almost
100 percent correct. If I were you, I would put it
this way. I would say if somebody has that risk
factor, that person would have a higher probability
of developing the disease compared to people who do
not have that risk factor. That is the most proper
interpretation of an odds ratio or relative risk.
Q That was well put.
At sufficient exposures benzene may pose a
substantial risk of harm to a worker. Do you agree
with that?
A Well, I think we already talked about that
this morning. If exposure is high enough and you
have a sufficient duration of exposure, then benzene
exposure can cause acute myeloid leukemia.
Q And therefore that would be a significant
risk to workers who are exposed to a sufficient dose

of benzene, correct?
A Yes.
Q You recognize that exposure to benzene causes life-threatening diseases, specifically acute myeloid leukemia?
A I mean, again, I guess I assume that you are still talking about -- Although in your last statement you do not have sufficient dose and so on, but I assume we are still going on on that basis.
Q With sufficient dose of benzene exposure, you recognize that the diseases caused from benzene exposure are life-threatening?
A Yes. Can be, yes.
Q Now, have you performed any literature search of historical information available to oil and chemical companies about the health hazards of benzene, specifically when the oil and chemical companies did know that benzene was harmful to workers blood and blood-forming organs?
A You are asking me whether I know --
Q Have you done such a literature search?
A To find out when the industry knew?
Q Yes, sir.
A No.
Q Have you ever been provided with any

historical documents from either the Chemical Manufacturers Association or its predecessor organization or the American Petroleum Institute or any of the oil companies who you have consulted with including Shell and Mobil?
A Sometimes I have been provided with research reports. I don't know whether that would fall into your category or not.
Q The first instances of benzene poisoning were reported in approximately 1897. Do you know that?
A From the historical point of view you are talking about case report of workers exposed to hundreds of thousands PPM of benzene.
Q You are aware that in 1897 there was a case report of benzene poisoning that resulted in damage to the blood and blood-forming organs, correct?
A At extremely high level, yes.
Q And you are familiar with the articles published by Hunter and others in the 1930's concerning health hazards of benzene, correct?
A Yes, certainly.
Q And you have read the 1948 American Petroleum Institute toxicological review for benzene; is that correct?

A Actually I have not.
Q You have never seen a copy of it?
A I don't know whether I have seen a copy or not, but I don't recall seeing it.
Q Now, from your work with Mobil and Shell, generally speaking the oil companies have the same general knowledge of epidemiology and toxicology as it relates to benzene from what you have observed, true?
A I cannot speak for them. I don't know.
Q Well, from what you have observed. Can't you speak to what you observed?
A No, because my relationship with Mobil or Shell is strictly on project work.
Q Well, with respect to the personnel from Mobil versus the personnel from Shell, have you seen them roughly to be the same or similar; or is one oil company a whole lot smarter than another from what you have seen?
A I'm not so sure I want to answer that question. You're going to get me in trouble. One group is smarter than the other?
Q Yes.
A You expect me to answer the question?
Q If you can answer it.

A I don't know who's smarter.
Q Have you had occasion where you're much more impressed with this company as compared to this company with respect to the epidemiological programs between Shell and Mobil, or are they about the same?
A I think both Shell and Mobil - they have conducted studies, they have sponsored studies. At least I can talk about refineries. They have conducted studies on all their refinery employees.
Q So, for all you know, they are essentially the same technology used at the same two companies, correct? Shell and Mobil?
A When you say, "technology," what do you mean?
Q Epidemiological technology practices.
A I think most people use the same type of data bases and the same kind of follow-up and the same kind of computer program.
Q Doctor, were you told how many contract maintenance people typically worked at the Mobil Beaumont refinery on a routine basis during the 1980's and 1970's?
A No.
Q Were you told typically how many contract maintenance workers worked at the Mobil Chemical

plant, specifically the Olefins & Aromatics plant in Beaumont?
A No.
Q Do you know what percentage of maintenance workers who worked at either the refinery or the chemical plant at Mobil were contractors versus Mobil employees? Do you know that percentage?
A No.
Q Doctor, would you recommend that a worker wash their hands with benzene as a health professional?
A No.
Q Would you recommend that a worker wash their tools and their clothes with benzene?
A No.
Q As a health professional you believe that those would be unsafe practices in which to engage, correct?
A I don't know whether it would be unsafe or not, but I certainly think it's unnecessary.
Q It poses a risk that you don't suggest anyone expose themself to, correct?
A If there is no need for you to be exposed to something,. why do it?
Q You wouldn't recommend that a laboratory

worker expose him or herself to benzene by cleaning glassware or running tests, correct?
A No, I would not recommend it.
Q I mean, again, that poses a risk of harm that you would recommend workers not expose themselves to, correct?
A It's a slightly different question when you say whether I recommend something or not. Even though I may not think that this is a risk as a result of that, I may not recommend it because it's totally unnecessary. But on the other hand if you ask the question whether I think that there would be a risk as a result of that - health risk - then I have to look at the situation more closely, how often the exposure was, what kind of concentration and so on. It may or may not result in some kind of observable health effect.
Q Dr. Wong, have you estimated, projected, calculated Mr. Lester Barrett's exposure to benzene while at Mobil?
A No, I have not.
Q Do you know that anyone has who is working on behalf of the defendants as experts - the defendant being Mobil?
A Dr. Fowler is the industrial hygienist

working on this case. I suspect that would be his area of expertise. I don't know whether he has done it or not. As I said earlier today, I have not talked to him about this case; so, I don't know where he-is in terms of his work.
Q The risk of injury to the hemopoietic system from benzene increases with the level and duration of exposure. Do you agree with that?
A I think you are a little bit general now.
Q Do you agree with that statement the way I phrased it?
A I would almost say no, I would not agree with that statement. I have not seen any dose-response relationship on the general issue, you know - the whole broad category. Now, if you are talking about acute myeloid leukemia, then I would say yes, there is some analysis on that. Even for the leukemia overall there is some analysis on that.
Q Leukemia and lymphoma are part of the broad category of hematopoietic malignancies, correct? Is that your understanding?
A Yes. I think, you know, if we started on this area, we might as well talk about the International Classification of Disease Code. What you are talking about - the broad category - is from

200 to 209. That's the 8th-Revision of the ICD Code; and, sure, you know, lymphoma - non-Hodgkin's lymphoma as well as leukemia would be in that broad category.
Q Are you a nosologist?
A No, I'm not.
Q Did you review any of the Death Certificates from the Mobil Refinery as it pertains to Exhibit 3, the epidemiological study of the Mobil Refinery dated July of 1997?
A Okay. Now, the question is a little bit --
Q (Indicating)
A Well, the question -- You just pointed to one of the reports, okay? I still have to say the question is a little bit ambiguous and for a very good reason, okay? The whole Beaumont study started in the 1980's. The very first study analysis was done by Dr. Morgan and myself at Environmental Health Associates; so, at that time we were the primary investigator of that project. So, we actually wrote to different state Health Departments to get the Death Certificates. We looked at the Death Certificates and so on. So, to answer your question, yes, we have looked at Death Certificates in that study.

Q Okay. Have you looked at all Death Certificates that are included in the revised or the updated study concerning the Mobil Refinery, specifically for all deaths referenced in Exhibit 3?
A No, I don't think so.
Q Did I ask you if you are a nosologist?
A Yes, you did; and I said I am not.
Q What did you do as it concerns Exhibit 3? What was your role in that study?
A You are talking about 3 and not 3A or 3B? 3?
Q 3.
A 3, as you know, is the revised manuscript submitted to the American Journal of Industrial Medicine. The manuscript was derived from an earlier report, which is Exhibit 3A, okay? My role in both 3 and 3A - I hate to go beyond your question because I have to because it is the same study - I was basically a consultant to them - and let me be more specific - making suggestions to them what kind of things to look at, what kind of analysis. And also I think I might have written part of the report.
Q What part of the report did you write, generally speaking?
A They sent me a draft, I looked at it and

made some corrections, that kind of thing. I don't think I can pin down to a specific.
Q Did you keep any of the drafts that Dr. Raabe sent you?
A No.
Q Were you instructed to throw those drafts away?
A No.
Q You just throw them away and don't keep them in the file; is that it?
A That's right.
Q Is it just a practice of most epidemiologists who work for corporations that they destroy drafts?
MR. COLBERT: I'm going to object to the form of the question and the mischaracterization in the question and the argumentative nature of the question.
Q You may answer the question
A Well, No. 1, I have a small office. I just don't have space to keep all the different drafts. No. 2, it would be confusing.
Q I mean, they're marked "Draft," aren't they? What would be confusing about a document

that's marked "Draft" as compared to the final copy?
A I don't know whether it would be marked "Draft" or not. Sometimes we don't look at the entire report. Sometimes we, you know, make revisions on a number of pages.
Q Now, Exhibit 3A, the update for the Beaumont refinery for Mobil dated December of 1994 - that study was submitted for peer review and publication, correct?
A Technically that-is not correct because that - the document that you referred to, 3A, is an internal Mobil report. We did not submit the entire report word-for-word for publication.
Q You submitted some significant portion of Exhibit 3A, the Mobil study concerning the Beaumont refinery dated 1994, for peer review and publication, correct?
A Yes.
Q And a rejection letter was received, correct?
A It's debatable whether you call that a rejection letter or not.
Q Let's clear this up. Did you receive an approval letter saying, "Yes, we are going to publish the paper as you submit it"?

A It very seldom happens that way. You usually have to go through some revisions.
Q There was a letter sent by the editor that said, "We are not going to publish it as submitted." That's correct, isn't it?
A Well, that's not all he said. He also said, "You should consider some of the comments of the reviewers if you wish to revise your manuscript." I mean, that is quite usual practice. Very few people get their paper accepted word-for-word the first time. I mean, you were a technical guy before. I don't know whether you have published papers before. If all your papers were accepted the very first time, good for you if that's your experience.
Q A letter was received concerning Exhibit 3A by an editor saying, "We're not going to accept your paper as written."
Did you keep that letter?
A I don't have a copy of the letter. I was not a first author. I think all the communications between the journal and the authors of this paper is through Gerry Raabe.
Q You read his deposition and you know that he doesn't have that letter that he received from the publisher basically where they stated that they were

not going to publish the paper as written, correct?
A I read his deposition. I don't remember whether he said that or not. I didn't pay attention.
Q Exhibit 3 as we sit here today October 8th, 1997, has not been published, correct?
A Probably not.
Q Do you know when, if ever, Exhibit 3 will be published in a peer-reviewed journal? Do you know a specific date?
A I think it's a matter of when and not whether you will publish or not because, as far as I know, the journal has accepted the final version for publication. Different journals have different backlogs and so on. I have no idea when it would get published. I would say in 1998.
Q But you are speculating on that, correct?
A Pretty highly-educated speculation.
Q How do you know what the letter said from the editor of the journal that refused to publish Exhibit 3A if you did not get a copy of that document?
A I talked to Dr. Raabe on the phone and --
Q Did you ask Dr. Raabe for a copy of the letter?
A I don't remember. I don't think so. but

basically he told me what the comments are and naturally I remember some of the comments and certain comments I disagreed with the reviewer and certain comments I say, "Well, yeah, it's a good idea; but it's going to take a lot of time to do the work."
I think the major -- I mean, regardless of what the comments are, if you see the accepted version of the manuscript, which is Exhibit 3, and compared that to the earlier report, the 1994 report which is Exhibit 3A, the major difference you see there is there are more what we call subcohort analysis in the later manuscript. And that was really the main issue that the reviewers brought up.
Q Do you have any opinions as it concerns Mr. Lester Barrett as to whether any bacteria caused Mr. Barrett's non-Hodgkin's lymphoma? Do you have an opinion?
A There are a couple of papers linking bacteria and the specific form of non-Hodgkin's lymphoma that is gastric lymphoma; so, there is some evidence on that. And, again, I have not done a comprehensive search. So, to be fair, I don't have an opinion on that. But certainly there is some suggestion for that.
Q As we sit here today, you don't have an

opinion, correct?
A No, I don't.
Q Do you know of any genetic risk factors associated with non-Hodgkin's lymphoma?
A Again, when I read papers on non-Hodgkin's lymphoma, I come across some papers on the association between a family history of cancer and non-Hodgkin's lymphoma; so, there is some studies at least suggesting that. But that was not my assignment in this case; so, I haven't done work on that.
Q I appreciate that, Dr. Wong. You understand that I don't have all of the full insight of every aspect of what the attorneys may or may not ask you so that I have to go through and ask you these series of questions, okay?
A I understand. I'm very happy to answer your questions.
Q Now, do you have any evidence to indicate that Mr. Barrett has a family history of leukemia or lymphoma?
A I remember reading in some medical records or something else that both his painters had a history of cancer. But I don't remember exactly what.

MR. HYDE: Let me object to the responsiveness. .
(By Mr. Hyde)
Q Mine was a very specific question.
Do you have any evidence that Mr. Barrett has family history of leukemia or non-Hodgkin's lymphoma specifically?
A I think my answer to you would still be the same. I said I don't know for sure because --
Q Okay. I appreciate that; but forms of cancer, from what you know, do not establish a risk factor for non-Hodgkin's lymphoma. For instance, liver cancer or pancreatic cancer or lung cancer . would not then be risk factors for Mr. Barrett as it concerns non-Hodgkin's lymphoma, correct?
A I don't know. Let me take a look at the papers (Reviewing documents).
Q I'm asking my questions based on scientifically valid studies, okay?
A (Tendering)
Q Okay. We are looking at a 1988 publication from Leukemia Research printed in Great Britain entitled "Non-Hodgkin's Lymphoma: Case Control Epidemiological Study in Yorkshire," correct?
A Yes.

Q Now, do you yourself rely on case control studies to establish causation in cancers, specifically non-Hodgkin's lymphoma?
A Yes. If they are well-done, case control studies are good studies.
Q Do you have any studies other than the one that I am holding that stand for the proposition that family members with leukemia or lymphoma or cancer establishes a risk factor for non-Hodgkin's lymphoma?
A I think that's the one that I can think of now.
Q Okay. First of all, in Yorkshire, England, are there any chemical plants and refineries?
A I don't know whether there are refineries or not, but certainly they did look at occupational history as well. In fact, the previous page they talk about the things that they have looked at - past med=-al history, what kind of medication or drugs they use, family history of not just cancer but different illnesses, what they call social characteristics where they include smoking and drinking and all kind of things and also occupation as well. So, they do a pretty intensive investigation.
Q In looking at the chart, Table 6 ---

A Yes.
Q --- where does Mr. Barrett fit in from a risk factor standpoint from family cancers?
A Well, as I said; at this point I don't know what kind of cancer his painters have; so, if he's --
Q Or are you certain as we sit here today that they had cancer?
A I read it someplace and --
Q I'm asking you: Are you reasonably certain that both painters of Mr. Barrett had cancer?
A I have to accept at face value the document that I've read. I mean, did I investigate whether they really have cancer? No, I did not.
Q But I'm asking you: Do you believe that they may have had cancer or are you certain that you read that both of his painters had cancer? I'm talking about Mr. Barrett.
MR. COLBERT: I'm going to object. We can solve this if the medical records are here with Dr. Wong.
MR. HYDE: We're not going to take that much time. I want to know if he knows or doesn't know based on his research to date.

(By Mr. Hyde)
Q Are you just recollecting that they might have; or is there an absolute, no-question recollection that both Mr. Barrett's painters had cancer?
A I'm pretty sure I read that someplace in the documents that I received.
Q If the evidence later proves that one or both did not have cancer, I'm sure that would affect your opinions; is that correct?
A Well, one, it still holds because it would still fit into the category here; but if later on you convince me that neither one of them had a history of cancer, then of course, you know, this would not apply.
Q What type of cancers did Mr. Barrett's painters have?
A I said I don't know.
Q Okay.
A So, what I'm trying to do is if one of them had leukemia or lymphoma, then he would fit into the first category. If not, he would fit into either the category called "Other Cancers" or ---
Q What is the risk factor for "Other Cancers"?

A The risk factor is 1.3.
Q What is the lower confidence interval on that?
A It's being, I guess, what I would call borderline significant because it is right at 1.0.
Q Does Table 6 stand for the proposition that if Mr. Barrett's painters had some other type of cancer, not being leukemia or a lymphatic cancer, that the relative risk would most likely be 1.3, therefore, a 30 percent excess?
A That's the interpretation.
Q And that's the extent of what that study stands for, should the evidence be that Mr. Barrett's painters did not have leukemia or a lymphatic cancer, correct?
A You mean his painters?
Q Yes.
A That is correct. But there is also another category called "Confirmed Other Cancers." And in that category the risk goes up a little bit to 1.5.
Q So, if Mr. Barrett's painters have some other cancer, then the relative risk would be 1.5, therefore, a 50 percent increased risk; is that correct?
A Let me go back to this study first. In

this study the information was based on an interview in a case control study. And subsequently they tried to verify or confirm that information provided by interview. And for all the cases, they get an increased risk of 1.3.; but among the cases that they can actually confirm - I assume confirmed using medical records and so on - that indeed there was a family history of cancer, then the risk goes up to 1.5.

Q Is there any other study that stands for the proposition that if you have a family history of cancer you are at increased risk of non-Hodgkin's lymphoma other than the study that you have in front of us?

A. I don't know whether they did other studies or not.

MR. HYDE: Let's mark that as the next exhibit number.

(WHEREUPON, WONG EXHIBIT NO. 7 WAS MARKED FOR IDENTIFICATION PURPOSES. SAME WILL BE FOUND IN AN EXHIBIT VOLUME ATTENDANT TO THIS DEPOSITION.)

(By Mr. Hyde)

Q The study we have been talking about, the

case control study from Yorkshire, has now been marked Exhibit 7, correct? .
A Yes.
MR. HYDE: Go ahead and mark that.
(WHEREUPON, WONG EXHIBIT NO. 8 WAS MARKED FOR IDENTIFICATION PURPOSES. SAME WILL BE FOUND IN AN EXHIBIT VOLUME ATTENDANT TO THIS DEPOSITION.)
(By Mr. Hyde)
Q Doctor, I've had marked as exhibit 8 a statement submitted to the OSHA benzene hearing by Otto Wong, Environmental Health Associates, dated March 4th, 1986. That would be your statement that you provided to OSHA, correct?
A Yes, I was a consultant to OSHA at the. benzene hearing in 1986; and this is the written statement that I provided to OSHA -- Well, I don't know whether I provided it to OSHA or just provided it to the judge at a hearing to basically talk about my study, the study that we talk about earlier.
Q The statement that you provided to the hearing officer at the OSHA hearings for benzene back in 1986 - you meant those to accurately reflect your

opinions at the time, correct?
A Yes, at that time.
Q That was after you had completed your work on the Chemical Manufacturers Association epidemiological study - the benzene project, correct?
A Yes.
Q Now, in your statement to OSHA, on Page 2 you state "The major findings of this study were as follows. When compared to the U.S. population, SMRs from all lymphatic and hemopoietic (lymphopoietic cancer) combined, leukemia, non-Hodgkin's lymphoma (lymphosarcoma, reticulosarcoma and other lymphoma and non-Hodgkin's lymphopoietic cancer, non-Hodgkin's lymphopoietic and leukemia) for the exposed group were slightly, but not significantly elevated above the national norm. These SMRs were considerably higher than those in the comparison group. When the group with no occupational exposure was used for comparison, the exposed group (continuous and intermittent) experienced a lymphopoietic cancer relative risk of 2.99 borderline significance."
That is a correct reading, isn't it?
A Yes.
Q Going down that same page, Page 2, you state: "The relative risk for non-Hodgkin's lymphoma

among white males in the continuously exposed group was 5.02, but not significant."
Is that a correct reading?
A Yes.
Q Now, in that study, you found that white males exposed to benzene had an SMR of 5.02 for non-Hodgkin's lymphopoietic cancer, correct?
A Well, there are a number of things we need to talk about.
Q Is that correct, first of all?
A Well, you read the statement.
Q Is that what you wrote?
A That's what I wrote, but that's not all I wrote.
Q Let's keep looking, then.
You further state on Page 3: "The dose-response relationship between cumulative exposure and 'non-Hodgkin's lymphopoietic cancer was of borderline statistical significance (p = 0.057; that is, we are 94.3 percent confident that the relationship was not due to chance)."
The relative risk for non-Hodgkin's lymphopoietic cancer was 3.93; is that correct?
A Yes, but what you have been doing, okay, and with all due respect, you read a couple of

sentences and say -- For example, you read about three sentences in one paragraph and then say, "Further down" and you skip one very important sentence that explains the elevation for the overall broad category and that sentence reads on the same page: "This excess was primarily due to seven leukemia deaths in the exposed group and none in the comparison group."
Now, I mean --
Q Well, that's for the leukemia relative risk.
A No. I am saying the excess in the broad category was due to the leukemia elevation. I mean, fair is fair. If you just want to win a question or two, then you can do that, but --
Q Okay. Let's talk about this. You had a study that you --
A Can I finish?
Q Well, yes --
A Can I finish? I just want to have a chance to explain the statements, okay? I don't want you to take one or two statements out here and there and make me read the statement and ask me a question "yes" or "no," because that is not what I said.
Q The attorneys for Mobil will get to ask all

the questions they want to in front of the judge and jury and they are welcome to do that; so, whatever you and I want to talk about, that's the choice that I get to make today. They can make their own choice at the time of trial. You are here as an expert witness to testify however you testify. So, we have our roles straight, correct?
A Well --
Q Do you know what I'm talking about?
A I'm here to answer your questions truthfully.
Q Well, good.
A And to me that means giving you a complete answer.
Q I'm sure that if you weren't going to answer them truthfully, he wouldn't want to know about that; and I'm not thinking that you would answer them anything less than truthfully on purpose, okay? So, what I'm doing is asking questions about your study and about the findings of your study, okay?
A I just want to give you a complete answer.
MR. COLBERT: I think Dr. Wong is trying to be as accommodating as he can to give complete answers.

Q Let me ask you: Dr. Rothman - do you know
Dr. Rothman?
A I know of him.
Q At that time he was representing Texaco in
asking you questions at the OSHA hearing, correct?
A No, he was not at the OSHA hearing.
Q Okay. He somehow asked questions of you in
some way, correct? You had a response to
Dr. Rothman's comments?
A I remember that when I finish the study for
CMA -- Of course we submit a report to CMA, and I
think either CMA or some other member companies gave
a copy of the report to different people to review.
Q Okay.
A And I assume that Dr. Rothman was a
consultant to Texaco, and he must have provided some
comments on my report to Texaco.
Q In the CMA study, wasn't Dr. Rothman also
an expert for Arco and didn't Arco remove its plants
from the CMA study?
A I'm not sure whether Dr. Rothman was a
consultant to Arco or not. But the second part of
your statement is correct to the extent that we
started with Arco and later on they told us that the
records were not there or were insufficient to do the

study.
Q The last page before you get to the reference it states: "As concluded in our report, the study has demonstrated that chemical workers occupationally exposed to benzene experienced significant mortality excess for leukemia as well as the broader category of all lymphatic and hematopoietic cancer when compared to chemical workers who were not occupationally exposed to benzene."
That is a correct reading, isn't it?
A That is correct, but again I have to point out to you the increase in the broad category was due to seven leukemia deaths in the exposed group and none in a nonexposed group. That is my earlier statement.
Q "The result of the leukemia excess was. consistent with some of the findings of previous epidemiological reports, but the cell types were not typical of those reported in many earlier studies."
That's a correct reading, isn't it?
A Yes. And I think I said somewhere either. here or in the report that we don't have enough cases to do a cell-type-specific analysis.
Q The data further shows

significant dose-response relationships between cumulative benzene exposure and excess mortality from leukemia and the broader category of all lymphatic and hematopoietic cancer"; is that correct?
A That's correct. Again, I want to point out that that was driven by the increase in leukemia.
Q "Although significant dose-response relationships were established, the shape of the dose-response curves were less definite due to the variability of the available data.,
Is that a correct statement?
A Yes.
Q Did you also testify at the OSHA hearings?
A Was that your question?
Q Yes, sir.
A That was my testimony.
Q That was your statement, wasn't it?
A Yes.
MR. HYDE: Mark document this, please.
(WHEREUPON, WONG EXHIBIT NO. 9 WAS MARKED FOR IDENTIFICATION PURPOSES. SAME WILL BE FOUND IN AN EXHIBIT VOLUME ATTENDANT TO THIS DEPOSITION.)

(By Mr. Hyde)
Q I have marked for identification Exhibit 9 the Occupational Safety and Health Administration "Informal Public Hearing, Occupational Exposure to Benzene," dated April 2nd, 1986, in Los Angeles, California, before Stuart Levin, Administrative Law Judge. This document has been marked as Exhibit 9.
.8 Do you recall testifying in front of Judge Levin on April 2nd, 1986.
A I don't remember his name, but I remember testifying in Los Angeles.
Q On Page 74 of the transcript, it says: "STATEMENT OF OTTO WONG, CONSULTANT - EPIDEMIOLOGY," correct?
A Yes.
Q Would you read your first statement between Lines 20 and 25 on Page 74 of Exhibit 9, please.
A 11My name is Otto Wong and I am senior epidemiologist at Environmental Health Associates, located in Oakland, California. I'm a board-certified epidemiologist and a fellow of the American College of Epidemiology. A copy of my CV has been submitted together with my statement to the OSHA hearing."
Q Okay. That certainly reflects you

testifying on that day in Los Angeles, correct?
That's you who we are talking about?
A Yes.
Q Would you read your conclusions on Page 79 and 80 that you rendered to OSHA at the hearings in front of Judge Levin in Los Angeles.
A What do you want me to do?
Q Read it for the record.
A "In conclusion, the study has demonstrated that chemical workers occupationally exposed to benzene experience significant mortality excess from leukemia as well as the broader category of all lymphatic and hematopoietic cancer combined when compared to chemical workers who were not occupationally exposed to benzene."
Q Now, let me ask you: One of the cancers included in the broader category of all lymphatic and hematopoietic cancer is non-Hodgkin's lymphoma, correct?
A Yes. But again I want to point out that in my statement and probably in my testimony early on I talk about the increase in this broader category was driven by the increase of leukemia, the fact that we saw seven leukemia deaths in the group of exposed workers and none at all - no leukemia in the

nonexposed group. I mean, I hate to go back to that statement over and over again; but you've been asking me questions out of content, you know, taking statements out. So, I have to repeat that.
Q In the CMA study for the exposed population there were seven leukemia deaths. For the people who worked at chemical plants where no benzene was present, there were no leukemia deaths. That's correct, isn't it?
A Yes.
Q You recognize benzene is a risk factor for leukemia?
A For acute myeloid leukemia, yes.
Q In the CMA there were no acute myelbid leukemias, were there?
A That's true.
Q On Page 79 starting at Lines 1 through 6 what did you say as to the industrial hygiene data that was available to you?
A Basically I had said that as in any other industries; there were very little industrial hygiene data before 1970.
Q In fact on Page 79 starting at line 1 you said: "There was very little or no industrial hygiene data prior to 1970, and exposure data were

mostly educated guesses"; is that correct?
A Yes.
Q So, even as it pertains even to the Mobil study in Beaumont at the Beaumont refinery, as it pertains to benzene exposures prior to 1970, they would only be guesses as to the level of benzene exposure at the refinery, huh?
A Yes. Now, let me talk about that sentence a little bit.
. Q Let me ask you a question first before we move on to that. You were provided with no industrial hygiene monitoring data from the 1940's, the 1950's, and the 1960's and for the most part the 1970's as it relates to benzene exposure data for workers at the Mobil Beaumont refinery; is that correct?
A In the Beaumont study?
Q Yes, sir.
A You mean when I was doing the original study?
Q When you were doing Exhibit 3A and 3. Those studies.
A I did not look at the industrial hygiene data.
Q Do Exhibit 3 and 3A stand for the

proposition that benzene does not cause acute myelogenous leukemia? .
A Will you please repeat that.
Q Yes, sir.
Do the Mobil studies on the Beaumont refinery, specifically the studies which have been marked Exhibits 3 and 3A, stand for the proposition that benzene does not cause acute myelogenous leukemia?
A I don't think we can make a blanket statement based on that study. In the earlier part of the study we did see some increase; but later on when we looked at the people who were hired subsequent to I believe around 1950 or so, we don't see an increase of leukemia after that. So, it depends on which group you look at.
Q But you were not looking at benzene . exposure in the work force because you did not try to put "This group of employees were exposed to this much benzene versus this level of benzene exposure to this group of employees" - you didn't do that, did you?
A I think I understand your question now. The study is on the general environment of the refinery and not specifically on benzene. I agree

with you on that.
Q So, therefore, when trying to determine whether or not benzene causes acute myelogenous leukemia, you don't necessarily look at Exhibits 3 or 3A because it doesn't stand for that proposition - correct - because you didn't specifically look at benzene exposures?
A If you ask me to look at the general issue whether benzene causes AML or not, of course we would not just look at one study. I don't care which study that is. We would look at all the studies. Now, Exhibit 3A and 3, being a refinery study, I think it would be part of the total picture; but it's not the only picture.
Q Okay.
A Are you going to let me go back to that statement where you said, "Later on"? I'm older than you, but I have a better memory than you. You said I can go back to that statement, and I hold you to that.
Q Well --
A Don't make promises, then.
Q Well, what statement do you want to talk about?
A Well, the statement that there were very

little or no industrial hygiene data prior to 1970 and exposure data were mostly educated guesses. Will you let me talk about that?
Q Was that statement true?
A It's true, okay? When you say, "educated guesses," it's a kind of relative term, okay? Now, when I was at hearing, I was a little bit concerned that people would use my study to do a very detailed quantitative risk assessment meaning that how many excess leukemia we can predict if the exposure is down to 1 PPM or 0.1 PPM and so on. And what I am trying to say is that based on the industrial hygiene data I have in my study, I don't think my study can tell you down to 0.1 PPM or 0.5 PPM. But that doesn't mean that the exposure data in my study are not good at all. I just want to make that distinction. That's why I said in my statement -- My very last statement in my last sentence in my statement submitted to OSHA is: "The shape of the dose-response curve was less definite."
Now everything ties together. You see the big picture now?
MR. HYDE: Let me object to the non responsiveness of that last answer.

(By Mr. Hyde)
Q Okay. Here we go. We have to look here now at Page 79 starting at Line 22. Would you read starting at Line 22 on Page 79 through Line 5 on Page 80.
A "The data further show statistically significant dose-response relationships between cumulative exposure and excess mortality from leukemia and the broader category of all lymphatic and hemopoietic cancer combined. That is to say, as the cumulative exposure of benzene goes up, so does the risk of leukemia and" --
Q I think that should be "lymphatic"?
A Yeah, that should be "lymphatic."
"and lymphatic and hematopoietic cancer. This provides further evidence that these diseases are associated with benzene exposure in the workplace in the past."
Q When you testified in front of OSHA, you believed your testimony to be true, did you not, Dr. Wong?
A Yeah. It's true; but again, the statements regarding the broader category - I said that many, many times this afternoon; and I point you to where I said that in my statement submitted to OSHA as well

as in my study - that the increase in the broader category was driven by the increase in leukemia.
MR. HYDE: I object to the responsiveness.
(By Mr. Hyde)
Q And you believe that the CMA study that you conducted used good epidemiological practices, correct?
A Yes.
Q Did you use any kind of statistical analysis to look at trends between exposure and the incidence of lymphohematopoietic cancer?
A No. I don't want to be nitpicking, but we did not study incidence. We studied mortality.
Q Excuse me. Okay.
Did you do any tests for trends concerning mortality from lymphohematopoietic cancers?
A I did; and that's published in - I'm sure you know this paper - in 1987.
Q What did the trends indicate as it relates to exposure to benzene and the mortality from lymphohematopoietic cancer?
A (Reviewing document) Well, in Table 12 in my 1987 paper I talk about trend analysis. There was a significant trend for leukemia in terms of

cumulative exposure. There was no trend for non-Hodgkin's lymphoma. Actually it's more than just non-Hodgkin's lymphoma. The ICD code for that category at that time that I used includes 200, 202 and 203. It's just the way that the statistics worked out at that time.
Q That was a whole different way of classifying lymphoma between the ICD 8 and the ICD 9, right?
A I don't know whether it's a whole lot of difference or not; but one of the problems in doing non-Hodgkin's lymphoma as well as multiple myeloma analysis is that the vital statistics provided by the National Center for Health Statistics is not broken down as such.
Q What is typically the latency period between exposure to benzene and the onset of a lymphohematopoietic kind of cancer?
A I can't answer that question because I don't think benzene causes all kinds of lymphopoietic cancer.
Q For the forms of lymphohematopoietic cancer you believe are caused by benzene exposure, what is the latency period?
A I think we can be more forthcoming than

that. We can say what is the latency between benzene exposure and AML. Why don't we do it that way? It's clearer.
Q What's the latency period, Doctor?
A Of what?
Q From exposure to onset?
A Of what?
Q You know the question.
A Of AML?
Q If you want to call it ')AML,11 that's fine.
A I just want you to say, "AML."
Q I have no problem saying, "AML."
A It depends on the level of exposure certainly. I think if the exposure is very high, the latency may be a little shorter. But over all, when you look at -- Maybe the best study on the issue is to look at the so-called NIOSH study. I think we are talking about close to 20 years.
Q That 20 years is just kind of a midpoint; and the range may vary a few years - ten years one way or ten years the other. Is that a fair statement? Or is it more?
A It becomes a little bit of a problem technically if you look at it that way. It's true that -- Let's say that 20 years is the average. Of

course, you know, there would be some less than 20 years and some longer than 20 years. But when you look at the range, certainly not all the AML's in any study, even if in that study there was a lot of benzene exposure, the average single AML was related to benzene exposure, there would be some cases - what we call background cases. So, I'm not so sure it's okay to look at the shortest latency - the cases with the shortest latency:
Q So, what is the range of latency that you agree with as it concerns exposure to benzene and the onset of acute myeloid leukemia?
A I guess my answer to that would be given exposure is very high - I'm talking about in the range of that NIOSH study - the latency would be around 20 years, give or take a few years.
Q Well, that's the mean.
A Yeah.
Q What is the range? From what to what?
A I don't know what the range is, because not every AML in that study is related to benzene exposure; so, therefore it would not be technically correct to use the range of latencies based on all the cases.
Q So, it would be 20 years plus or minus some

time period based on the circumstances of exposure?
That would be the latency period concerning benzene and the onset of acute myeloid leukemia, correct?
A Yeah.
Q Turn to Exhibit 3, please. That's the Mobil Refinery Beaumont Study.
A Yes.
Q Would Mr. Barrett's non-Hodgkin's lymphoma be somehow counted in this study?
A He worked as a contractor, right?
Q Right.
A He would not be in this study.
Q No contractors were included in the Mobil Refinery study which is Exhibit 3, correct?
A Yes. Well, do you ask a double-negative question?
THE COURT REPORTER: Question by Mr. Hyde: "No contractors were included in the Mobil Refinery study which is Exhibit 3, correct?"
A Correct.
MR. COLBERT: Do you want to take a break?
THE WITNESS: Anytime it's convenient we can take a five-minute

break.
MR. HYDE: Let's take a five-minute break, and start back at 2:30.
(AT THIS TIME A BRIEF RECESS WAS TAKEN, AND THE PROCEEDINGS THEREAFTER RESUMED AS FOLLOWS:)
(By Mr. Hyde)
Q Did you ever recommend to Mobil that they try to include long-term contractors who worked at the Mobil Refinery in the mortality study which has been marked as Exhibits 3 and 3A?
A I don't know whether I have actually made the recommendation or not; but I think way back when we did the very first study, which is not 3 or 3A, but 3B, we tried to find out whether it is possible to include contractors in the cohorts; but it was just not possible. Mobil did not have records on contractors.
Q Did you do anything to examine whether or not contractors could be included in the Mobil study of the Beaumont refinery?
A We discussed it a little bit; I just don't think we have any way to identify the contractors.
Q Did you attempt to contact any of the local

unions, specifically the Pipe Fitters Union 195 to see if they had information about who worked in maintenance at the Mobil Refinery?
A We did not contact the locals. One of the reasons is that some of the contractors - they don't work at just one or two places, but they work all over the region. So, that means they would have exposure not only at Beaumont, but from other refineries or even other industrial complexes. The exposure can be quite different.
Q Would you turn with me, please, to Table II of Exhibit 3, the Mobil study of the Beaumont refinery? Are you there?
A Yes. I was distracted by your partner.
MR. COLBERT: He can be rather distracting.
Q On Table II, which is entitled "Observed and Expected Deaths by Cause for the Beaumont Refinery Cohort," under the broad category of "Lymphatic & Hematopoietic Cancer," isn't it correct that there is a 33 percent increase of observed deaths from lymphatic and hematopoietic cancer as compared to what was expected amongst the Mobil employees?
A Yes.

Q That is a statistically significant
2 increase, correct?
3 A The lower limit was 103; so, it was very
4 significant.
5 Q For the purposes of coding, when a Death
6 Certificate says, "non-Hodgkin's lymphoma," it is my
7 understanding that that death will be coded in the
8 category entitled "Other Lymphatic Tissue Cancer" and
9 those would be ICD codes 202, 203, 208 in
10 parentheses. Is that your general understanding?
11 A I think somewhere in your question you got
12 a couple of things mixed up. You said when the cause
13 of death is non-Hodgkin's lymphoma, it would be coded
14 as what?
15 Q It would be coded for epidemiological
16 purposes in the broad category "Other Lymphatic
17 Tissue Cancer," ICD codes 202, 203, 208 in
18 parentheses, correct?
19 A No. It would be coded as 202.
20 Q Okay.
21 A But in an analysis -- I think the right way
22 to say is in an analysis because we use this program
23 called OCMAP. The way that the program is set up, we
24 put 202, 203 and 208 together. That is the analysis,
25 but the coding itself is very unique, specific. 202.

Q It's 202?
A Yes.
Q Okay. I want to make sure that my question is precise and your answer is precise as well.
A You have been doing a very good job today.
Q When a person dies of non-Hodgkin's lymphoma, for analysis, that death is coded under ICD Code 202; is that correct?
* A No.
Q How is that incorrect?
A Because when you say -- When someone dies from non-Hodgkin's lymphoma, that would include 200 as well, lymphosarcoma, because lymphosarcoma is part of non-Hodgkin's lymphoma. But if you say -- To save you time, if you say if someone dies from lymphoma or malignant lymphoma, not otherwise specified, then it would be in 202. .
Q When the Death Certificate states "non-Hodgkin's lymphoma," for analysis, where is that death coded? Under what codes?
A It may go into 202; or you may go into 200, depending on the specific type if there is information on that.
Q But what I'm not giving you is any other information other than the cause of death states

"non-Hodgkin's lymphoma." Isn't it correct that that death would then be coded under ICD Code 202?
A Most likely it would go into 202, especially in the recent years because people try to change the terminology to "non-Hodgkin's lymphoma," overall as opposed to break it down by lymphosarcoma and other lymphomas.
Q Look with me on Table II, the subcategory "Other Lymphatic Tissue Cancer." Do you see that, sir? .
A Yes.
Q What is the SMR for that category of deaths amongst Mobil workers?
A 158.
Q Does that mean there was 58 percent more deaths from other lymphatic tissue cancers that were observed over what was expected?
A Okay. What it says is that there was 58 percent more deaths due to this category called "Other Lymphatic Tissue Cancer" which, based on the table that we looked at, include 202, 203, and 208.
Q 202 is non-Hodgkin's lymphoma?
A 202 is non-Hodgkin's lymphoma, 203 is multiple myeloma.
Q What chemical is present at a refinery that

is either known or suspected of causing cancer of the lymphatic and hematopoietic system?
A Well, we know that benzene is present at a refinery and we know that-benzene can cause AML, but that doesn't quite answer your question because you didn't ask me AML.
Q Do you recognize that benzene is present throughout most of the refinery at Mobil's refinery in Beaumont?
A Yeah, at different concentrations at different times, yes.
Q And you recognize that benzene is present at the Mobil Chemical 0 & A plant, correct?
A The what?
Q You are aware that benzene is present throughout the various parts of the Mobil Chemical 0 & A plant, correct?
A I have nothing to do with that plant, I don't think.
Q What do you know about the operations of the Mobil Chemical plant in Beaumont, specifically the 0 & A unit?
A Not much. I mean, I did a study on the refinery a few years ago. That's the extent of my knowledge.

Q Do you know if benzene is manufactured at the Mobil Chemical O & A plant?
A I'm not sure.
Q Now, when I asked you about cigarette smoking and the SMR was 140, you indicated to me that an SMR of 140 would indicate that a cigarette smoker would have a higher probability of getting non-Hodgkin's lymphoma as compared to someone who did not have cigarette smoking as a risk factor, correct?
A Yes.
Q Is it also true, then, that a person who works at the Mobil Refinery has a higher probability of acquiring cancers of other lymphatic tissue as a result of their employment at the refinery?
A No, because you put down as one of the requirements as a result of the employment; and if we want to look at -- I mean, overall we see an increase of 58 percent, okay? That, we agree to. The next thing is where does that come from, okay? And you are trying to link that with employment at the refinery, right? I guess if we want to ask the question, then we have to look at another criteria. In that case it would be: Is there any trend - a positive trend - of a higher risk associated with a longer exposure? That would answer

that question.
Q But you didn't need that analysis concerning cigarette smoking. In other words, you didn't look at whether someone smoked 10 years, 20 years, or whether they smoked one pack or two packs when you answered my questions concerning cigarette smoking, did you?
A No. In fact, when we talk about cigarette smoking and some other risk factors that we talk about today, I never said that I have made a definitive statement on those risk factors All I told you was: As a result of my knowledge of the other studies, I have come across some studies suggesting or reporting that there may be an increase. I have not done a thorough research on the same issue. You are comparing my knowledge of cigarette smoking and non-Hodgkin's lymphoma to the knowledge I have on the Beaumont study. The Beaumont study I was quite involved. I did the very first study some time ago, and I directed some of the analysis. That is not the same as reading somebody else paper.
Q one plausible explanation for the 58 percent increase, which is statistically significant, for other lymphatic tissue cancer deaths amongst the

Mobil Refinery workers is their work at the refinery?
That is a plausible explanation, correct?
A No, because in order for that to be true,
then we would expect a positive dose-response
analysis. If we look at employment -- Let's -- You
been using employment at the refinery as, quote,
unquote, exposure, okay? Let's use that.
Q Well, no. First of all, I'm not doing
that.
I would like to see somewhere in Exhibit 3
some analysis of benzene exposure. Can you point
that to me amongst the pages in this study where
there is an analysis of deaths by benzene exposure?
Does that exist in Exhibit 3?
A No. We did not do it.
Q As a matter of fact, there was no attempt
to correlate workers' exposure to benzene and the
incidence of lymphohematopoietic cancer specifically,
correct?
A There was -- I don't know whether we have
sufficient or adequate benzene exposure data that .
would allow us to do a full-scale study based on
benzene exposure.
Q One thing that you do have contained in
Exhibit 3 of the Mobil study of the Mobil Refinery in

Beaumont is you have 3- to 400 administrative personnel included in the study results,. correct? That's what Dr. Raabe testified to.
A In the overall study. But we also did job-specific analysis.
MR. HYDE: Let me object to the responsiveness.
(By Mr. Hyde)
Q Just answer the question I'm asking. There are approximately 3- to 400 administrative personnel who are included in the study of the Mobil Refinery in Beaumont, correct?
A I don't recall the exact number; but we do have administrative people in the study, yes.
Q As far as you know, that sounds about right?
A I trust you. -
Q Okay. Is there in Exhibit 3 a table or a paragraph or something that discusses the inclusion of 3- to 400 administrative personnel in the study and what effect that has on the study?
A I think we take care of that by presenting Table XI and Table XII.
Q Tables XI and XII, you think, assist in the analysis by excluding the administrative personnel,

correct?
A Yes. I assume when you bring up the issue of administrative employees, the rationale is they would have less exposure than operators or people in the Maintenance Department; so, we take care of - take care of that by looking at operators by themselves and also the people in the Maintenance Department themselves.
Q Okay. Let's talk about administrative personnel. You, Dr. Wong, recognize that a secretary an accountant at a refinery most likely would have little or no benzene exposure, correct, specifically at the refinery?
A Yeah. They would have little or no exposure compared to operators and maintenance. That's why we didn't include them in Table XI or XII.
Q The effect of including 3- to 400 administrative personnel in an epidemiological study of refinery workers is to affect that ratio between observed and expected because with the addition of these people who are not exposed, you have the potential for dilution. Do you agree with that statement?
A That statement is applicable if we do not do any specific analysis on operators or maintenance

people. If we just present you with one paper and say, "Look. This is the entire study. That's it," that statement is true.
But we also provide you with specific analysis on operators and maintenance people; so, if indeed that statement you make is true, then by looking at the operators and maintenance people, then there is no dilution effect.
MR. HYDE: There are portions of that answer which are not responsive that I need to object to.
A Does that mean you don't like my answer?
(By Mr. Hyde)
Q No, it means part of your answer was not responsive to my question.
A I have to give you a complete answer. When you read a report you don't just look at Table I or Table II. You look at Tables XI, XII, XIII, and XIV.
MR. COLBERT: Well, I don't get a chance to object in this objection, because Dr. Wong is doing it all for me.
MR. HYDE: I'm glad you noted that for the record.
MR. COLBERT: Sure.

(By Mr. Hyde)
Q Okay, Dr. Wong. How many total tables are there in this Exhibit 3, the Mobil study of the refinery in Beaumont?
A 15.
Q 13 of the tables, then, contain administration persons with little or no opportunity for exposure to benzene, correct?
A Are we counting the number of tables as an indication of how important they are?
Q No, sir, we are not. If you will, just answer my question.
13 of the tables in Exhibit 3, the Mobil study of the Beaumont refinery, contain administrative workers with little or no opportunity for benzene exposure. That's correct, isn't it?
A I don't know. I have to look at the tables. It's a funny way of looking how important they are.
(Reviewing document) No. Look at Table XIII.
Q I want you to tell me: How many tables --
A It's based on maintenance people.
Q I want you to tell me how many tables included in Exhibit 3 would include administrative

personnel with little or no opportunity for benzene exposure at the refinery.
A By my count, at least four tables do not include them at all.
Q Does that mean that the --
A Wait. No, more than that. Wait, wait, wait. Hold on. Five.
Q Ten of the tables do contain administration personnel who have little or no opportunity for benzene exposure. That's true, isn't it?
A Yes.
Q And you know that Mr. Barrett was a pipe fitter in Maintenance, correct?
A According to his testimony, yeah.
MR. HYDE: Mark this, please.
(WHEREUPON, WONG EXHIBIT NO. 10 WAS MARKED FOR IDENTIFICATION PURPOSES. SAME WILL BE FOUND IN AN EXHIBIT VOLUME ATTENDANT TO THIS DEPOSITION.)
(By Mr. Hyde)
Q Dr. Wong, you have seen Exhibit 10 before? It is a group of job categories and projected exposure rates that was used in the Chemical Manufacturers Association epidemiological study,

specifically the benzene project. Generally speaking you are familiar with it, correct?
A I think I have seen this when I was doing the CMA benzene study. It may not be the exact copy, but some form of it, yes.
Q Within Exhibit 10, on Bates-stamped Page 013068, there is a job exposure potential classification for a pipe fitter, correct?
A Yes.
Q It states: "daily assignments in benzene areas"; is that correct?
A Yes.
Q "work directly on equipment containing benzene; peaks greater than 25 parts per million"?
A Yes.
Q "Time weighted average less than 10 parts per million"?
A Yes.
Q You have been aware, have you not, that pipe fitters have potential exposure to benzene in refineries and chemical plants where benzene is . present, true?
A They have the potential?
Q Yes.
A Yes. Of course.

Q You yourself know through monitoring records that you have seen that pipe fitters have actual benzene exposure at refineries such as the Mobil Refinery in Beaumont?
A Sometimes they do.
Q Have you been provided any of the industrial hygiene monitoring at the Mobil Refinery for pipe fitters?
A I think in my two boxes here I have some industrial hygiene data and I don't remember whether they are or they are not specific measurements on pipe fitters themselves. I remember when I went through the industrial hygiene data the measurements are very low.
MR. HYDE: Let me object to the responsiveness.
(By Mr. Hyde) .
Q You are not here today to testify that there was sufficient industrial hygiene monitoring to be representative of pipe fitter's exposure at the refinery during the 1970's and 1980's, are you?
A No, I'm not.
Q You are not here to testify that there was sufficient industrial hygiene monitoring for benzene exposures for pipe fitters working at Mobil Chemical?

You are not here to testify to that, are you?
A No.
Q Have you been provided with any documents from any of the industrial hygienists who worked at the Mobil Chemical plant or Mobil Refinery where those industrial hygienists have stated that there is inadequate industrial hygiene monitoring for benzene to be reflective of worker exposures to benzene, specifically at the Mobil Refinery? Have you been provided with any documents such as that?
A I don't remember seeing that.
Q Let's just right to the bottom line here. I think let's look at Table XIII.
A See? You knew Table XIII all along. You're just trying to trick me.
MR. HYDE: I object to the responsiveness.
(By Mr. Hyde)
Q Let me ask you: Have you seen any documents to indicate that pipe fitters' exposure to benzene on a peak basis at the refinery may be as high as 200 parts per million? Have you been provided with that information?
A Let me try to understand. Any analysis based on, quote, unquote, peak exposure?

Q Yes. And I think you and I are going off here in different directions. Let me see if I can try to phrase the question a little bit more precisely for you.
Have you seen any correspondence or documentation indicating that pipe fitters' exposure to benzene on a peak basis may be as high as 200 parts per million?
A I have not seen that.
Q Would you turn with me - and I think you are already there - to Table XIII, correct?
A Yes.
Q The title of this table is "Selective cause-specific mortality among Beaumont males employed greater than six months in maintenance craft jobs by hire period."
That's a correct reading, isn't it?
A Can I look at your table?
Q (Tendering)
A Yeah, that's greater. I think that's some symbol screw-up. A little different. That's what the title is, yes.
Q The healthy worker effect was demonstrated in Exhibit 3, the updated mortality of workers at the Mobil.

A When you say, "The healthy worker effect,"
you are referring to --
Q The overall mortality.
A --- a deficit in the overall mortality?
Q Yes.
A I'm looking at Table II. The overall SMR
is 82; so, that statement is correct.
Q Keeping in mind the overall deficit of
mortality amongst the workers at the refinery, was
there any attempt to make an adjustment to the
various causes of death such that you would have an
adjusted SMR, taking into account the healthy worker
effect for specific causes of death? If you don't
understand, let me ask it again.
A I understand it. I think I understand your
question. I'm trying to give you a simple,
straightforward answer.
Q Were there any calculations made to adjust
any of the specific causes of death - those SMR's -
taking into account the healthy worker effect that
was demonstrated in the study? "Yes" or "no"?
A No, because when you say, "the healthy
worker effect," you are really referring to a deficit
of mortality from cardiovascular diseases. When we
use the standardized mortality ratio approach, we

don't need to adjust for that in terms of cancer. I think you are really referring to another method that sometimes people use called proportional mortality ratio. If you use PMR, because of the deficit in cardiovascular disease, then you need to adjust the cancer PMR.
Q Well, I'm looking at Table II here.
A Okay. Table II.
Q We'll come back to Table XIII again. But looking at Table II, look under "Accidents, Poisoning, and Violence."
A Yes.
Q It appears to me that the SMR's ranged from 55 to 68, correct?
A Right.
Q Now, is there any reason that if you work at Mobil refinery you would have less motor vehicle accidents? Is there something prophylactic about working at Mobil that prevents you from having car accidents?
A In a direct sense, yes, because people who have a stable employment, a stable lifestyle - I think they avoid, you know, excessive drinking and so on. That may have some result on that. That is - Really, part of the healthy worker effect is a stable

lifestyle.
Q But even with that stable lifestyle, under "Lymphatic and Hematopoietic Cancers," the Mobil workers had a 33 percent increase in observed deaths over expected, correct?
A Yes.
Q Now, let's go to Table XIII. "Other Lymphatic Tissue" is a category that would contain individuals who died from non-Hodgkin's lymphoma, correct?
A And Hodgkin's disease and something else.
Q What is the SMR under "Other Lymphatic Tissue" for maintenance workers who worked more than six months in a maintenance craft and who were hired before 1950?
A "205."
Q And that is statistically significant, correct?
A Yes.
Q Now, if you are a maintenance worker who worked at the Mobil Refinery more than six months in a maintenance craft at the Mobil Refinery in Beaumont and you were hired after 1950, what is the SMR for other lymphatic tissue cancers?
A For other lymphatic tissue cancers?

Q Yes, sir.
A That's 11443."
Q That again is statistically significant, correct?
A Yes.
Q Looking at Table XIV, for "Observed and Expected Deaths," for hematopoietic cancers among male maintenance craft workers by duration of employment, when looking at non-Hodgkin's lymphoma, were there more observed deaths from non-Hodgkin's lymphoma as compared to the number of expected deaths from non-Hodgkin's lymphoma in each of the three categories of years?
A well, when you look at the number - the absolute number, yes, it is. But, for example, people who work for 30 years or longer, you observe 4 non-Hodgkin's lymphoma deaths; and the expected is 3.1. So, sure, 4 is greater than 3.1; but certainly it's not statistically significant and I'm not so sure how much interpretation you can attach to that kind of a finding.
MR. HYDE: Let me object to the nonresponsive portion of the last answer.
A I knew you would say that.

(By Mr. Hyde)
Q Let me ask you: This study, Exhibit 3, is
is not a morbidity study that deals with the
incidence of non-Hodgkin's lymphoma or leukemia
amongst the workers who worked at the refinery; isn't
that right?
A It's a mortality study.
Q But I'm right, correct?
A You are right.
Q I recently had a client who was a pipe
fitter who worked at the Mobil Refinery for more than
30 years, and he just died of non-Hodgkin's lymphoma.
I take it he would fall in that category of greater
than 30 years and at some point in time if this study
is ever updated, he would be in that category more
than likely, correct?
A He worked at Mobil more than 30 years?
Q Yes.
A I mean, this is a hypothetical or what?
Q No. This is real. I can tell me you his
name. Mr. Fontenot.
A You are not talking about a plaintiff in
this case? I'm getting very confused.
Q I don't want to confuse you, now. I'm just
saying that my client, Mr. Fontenot ---

A He is not part of this case?
Q He is not part of this case.
A Okay.
Q He was diagnosed with non-Hodgkin's lymphoma four or so years ago.
A Yeah.
Q He just died. Now, he would not be counted as a non-Hodgkin's lymphoma death, would he, in this study?
A Was he a Mobil employee?
Q Yes.
A Well, at this point he would not be counted as that because --
Q The cut-off date --
A --- the cut-off date is 1987.
Q But his 30 or more years that he worked at the refinery are counted in this study, correct?
A Yes. Yes.
Q You don't know how many other individuals who worked in maintenance have died from non-Hodgkin's lymphoma since 1994, correct, and are not counted in this study?
A Since 1994?
Q Yes, sir.
A well, you know, I can't help you in that

area actually. We don't know since 1987. I mean, you know, the cut-off date is 1987.
Q Okay.
A But by the same token, we did not include any-person years of observation after 1987. So, after 1987, essentially we don't put anything in the numerator; and rightly so, we did not put anything in that denominator. That is the correct way of doing the epidemiology, and you would not want me to do anything otherwise.
Q Let's do this. Observed over expected equals an SMR - correct - generally speaking?
A Yes.
Q What I'm trying to get to is that with Mr. Fontenot his years of employment are calculated into the expected, correct? If he retired in 1987, his 30 years are included in the calculation of the number of expected deaths from non-Hodgkin's lymphoma, correct?
A Hold on. The two -- We are coming to a very important concept, and I'm very serious about this.
One is called length of employment, okay? That essentially is what we call a classifying variable, okay? His would be put into that category;

but in terms of the calculation of SMR itself, okay, the length of employment has nothing to do with the expected, okay? Let me finish, okay? We count the person years of observation in order to find out how many person years we have and multiply that by the rate from the general population, okay? We stop his person years of observation for this person or any other cohort members in 1987.
Q I agree with you 100 percent.
A Okay.
Q That's the point. Mr. Fontenot contributed 30 person years to this study, given that he retired prior to 1987? -
A Yes.
Q He died after 1987?
A Yes.
Q His person years will be included in the study as it pertains to the expected rate of non-Hodgkin's lymphoma, correct?
A Yes.
Q But since he died after 1987, his death will not be included as an observed death?
A At this point, no.
Q You are familiar with Death Certificates from the State of Texas, correct?

A I have seen them, yes.
Q Have you ever compared the accuracy of Death Certificates from Texas as compared to Death Certificates from other states?
A I'm not sure I have done that. I am not sure -- When you say, "accuracy," what do you mean? In terms of causes of death?
Q Yes, sir, as it relates to cause of death.
A I'm not aware of any particular concern that the Death Certificates from Texas are any worse than from any other state.
Q Did you know that Death Certificates in the state of Texas can be filled out or completed by a justice of the peace who has no medical training?
A I don't know what percentage of that is.
Q But did you know that?
A No.
Q You recognize that when someone who does not have medical training completes a Death Certificate that that is a potential source of error for epidemiological studies that use these Death Certificates, correct? A potential source?
A I think you are talking about a general concern that we epidemiologists would have from time to time in relying on Death Certificates for

diagnostic information and I certainly would agree with you; but I think the concern is more for cardiovascular diseases, you know, different subcategories of cardiovascular diseases. I think for cancer, by and large, it's pretty accurate.
Q Well, let me give you an example. I represent a man who worked at Chevron. He was a long-term worker and worked at the aromatics and amines units. He had kidney cancer and, I think, approximately a 3-pound tumor removed off of his kidney. He survived approximately two to three years. His tumor came back in his kidneys. He then was taken to his home where he passed away from kidney cancer. On his Death Certificate it said, "Natural causes."
A How old was he?
Q He was about 67. .
Now, under that set of circumstances, that would be an error if one were to rely upon that Death Certificate in using that Death Certificate in a mortality study - correct - given that a justice of the peace completed the Death Certificate?
A I certainly would agree with you in this specific example and that is the reason why we cannot just rely on any single study or a small study and we

should really look at all the studies that's pertinent to the issue and not just one study.
Q Well, I agree with you. Let's now look at the China study where Richard Hayes is a principal investigator.
MR. HYDE: Let's mark that as the next exhibit.
(WHEREUPON, WONG EXHIBIT NO. 11 WAS MARKED FOR IDENTIFICATION PURPOSES. SAME WILL BE FOUND IN AN EXHIBIT VOLUME ATTENDANT TO THIS DEPOSITION.)
(By Mr. Hyde)
Q Dr. Wong, are you familiar with the study that was published in the Journal of the National Cancer Institute on July 16th, 1997, entitled: "Benzene and the Dose-Related Incidence of Hematologic Neoplasms in China," the principal investigator being Richard B. Hayes? Are you familiar with this study?
A Yes.
Q I know at one time that the CMA was considering doing certain epidemiological studies in China. Do you recall any of those discussions?
A The CMA was interested?

Q The Chemical Manufacturers Association.
A Not that I know of.
Q Have you had an opportunity to speak with Mr. Hayes or any of the other investigators who conducted this study which has been marked as Exhibit 11 concerning this --
A This Dr. Hayes - I know him and I think the last time I saw him was at the Benzene '95 Conference.
Q That's Dr. Bernie Goldstein's seminar up in New Jersey?
A It was Benzene '95. I don't know whether we can say that's his seminar.
Q By the way, speaking of the Benzene '95 seminar - you know Dr. Goldstein, correct?
A I know of him. I published -- I've said, - "Hi" to him; but I don't know him personally.
Q Dr. Goldstein is recognized as an expert in hematology and oncology. Do you agree?
A I don't know his area at all. All I know is he is not an epidemiologist.
Q I have retained Dr. Goldstein in a case along with another law firm in New Jersey. Dr. Goldstein has opined that benzene exposure causes non-Hodgkin's lymphoma. Are you aware of that?

A I'm not surprised.
Q This is the same Dr. Goldstein that teaches at the medical school in New Jersey, correct?
A Yes.
Q That's the same place where the Benzene '95 conference took place, correct?
A Yes.
Q It's fair to say Dr. Goldstein is a recognized expert as it relates to benzene, to your knowledge?
A I don't know about that.
Q My question to you is: Have you ever had a discussion with Dr. Richard Hayes concerning his study which has been marked as Exhibit 11?
A As I was going to say, until you interrupted with --
Q I don't mean to interrupt you.
A --- your story about Goldstein --
MR. HYDE: Let me object to the nonresponsiveness.
(By Mr. Hyde)
Q Go ahead.
A I saw Dr. Hayes at Benzene '95 back in, I guess, the summer of '95 and basically he was at a conference and I was at a conference and he was

presenting some numbers, findings from the so-called Chinese benzene study, and I asked him what results are and so on. And he said, "Oh, I'm going to make a presentation. You will see it."
That was the extent of our conversation.
Q Have you ever worked with Dr. Hayes?
A In what sense you mean?
Q I mean: Have you conducted a study with him?
A No.
Q Have you ever-peer-reviewed one of Dr. Hayes' studies, to your knowledge?
A I don't recall; and I don't think I'm at liberty of telling you because if I work for a journal, I'm not supposed to tell people whose manuscript I review. I hope you can respect that.
Q I can.
Did you consider Exhibit 11 and the findings associated with that study relative to your opinions here today?
A Well, as part of the overall picture. I mean, it's part of the articles that I reviewed. I have some comments on that; and to some extent, they found a suggestion of non-Hodgkin's lymphoma, an increase of non-Hodgkin's lymphoma in their group.

But I question whether that finding is really that conclusive, No. 1.
And No. 2, I'm not so sure for the study overall whether we are talking about benzene exposure and nothing else, because in that study - in the so-called Chinese benzene study, the majority of the workers were painters.
MR. HYDE: Let me object to the nonresponsive portion of your answer.
(By Mr. Hyde)
Q Certainly you recognize that solvents - specifically aromatic solvents - typically contain some level of benzene in the solvents used by painters, correct?
A Yeah. I mean, if you are talking about 2 percent content of benzene, that means 98 percent of the solvent is not benzene. It's something else; so, how do we know what we are observing?
Q Well, have you seen any studies to support a causal connection between non-Hodgkin's lymphoma and solvents such as toluene, xylene, hexane, hexene, and those types of materials?
A I don't know whether I have seen them or not.
Q Well, as we sit here today, do you have any

specific recollection?
A In the study done by the group at Chapel Hill, University of North Carolina, I think there was an increase -- I remember some increase of lymphatic leukemia. There may be some increase of lymphosarcoma, and certainly the exposure was not benzene. It was -- I forgot whether it was xylene or toluene. I have to go back and take a look if you want to ask me.
Q As we sit here today, is it your position that you suspect toluene, xylene, or other aromatics as a potential risk factor for the development of lymphohematopoietic cancers in general?
A No, I'm not saying that. All I'm saying is that in the so-called Chinese benzene study, most of the workers were painters and painters are exposed to all type of chemicals with or without benzene exposure; so, to that extent, we are not talking about specific benzene exposure.
Q To what chemicals are painters exposed that are capable of causing lymphohematopoietic cancers?
A I don't know.
Q The author and the other researchers who assisted Dr. Hayes in Exhibit 11 attribute the excess risk of lymphohematopoietic disease to benzene

exposure, don't they? Is that correct?
A I want to be sure I understand your question. You are talking about overall lymphopoietic and not non-Hodgkins lymphoma?
Q I'm talking about the overall category first.
A I hate to disappoint you, but they don't look at the overall category.
Q Do you mind if I come over here one second? It says: "For workers historically exposed to benzene in average levels of 10 parts per million, the relative risk for all hematologic neoplasms combined was 2.2.'1
Does that not indicate to you that they looked at the broad classification of hematologic malignancies?
A They did, but they also looked at specifically NHL.
Q So, I shouldn't be as disappointed as you thought I was, huh?
A Well, if you include leukemia and everything else, yeah.
Q Okay. Now, Dr. Wong, don't the authors conclude that. exposure to benzene for periods greater than 10 years results in a 4.1 relative risk for

non-Hodgkin's lymphoma?
A No. The table that you point me to, the 4.1 relative risk refers to the people who were hired before 1972.
Q And who have ten years of exposure to benzene?
A You must spend more time on this than I do. I don't see the "10 years." Where do you find the "10 years"? You were pointing at 4.1.
Q No, wait. Hold on. For this one, it just says: "Hire date." You're correct. If you were hired before 1972, you had a 4.1 relative risk for non-Hodgkin's lymphoma, correct?
A Yes.
Q Now, if you turn over to the next table, which is Table II, if you worked greater than 10 years in a benzene-exposed group, the relative risk for non-Hodgkin's lymphoma was 4.2; is that correct?
A Yes.
Q That is statistically significant, correct?
A Yes.
Q You pointed that out to the lawyers for Mobil, didn't you - that there was this Chinese study that concerned benzene and non-Hodgkin's lymphoma as part of your consulting work?

A This study?
Q Yes.
A Yes. The overall Chinese study, yes.
Q I'm just wondering, because they filed this Motion for Summary Judgment saying there is nothing in this world that would suggest benzene causes non-Hodgkin's lymphoma; and at least you and I can agree that this study does suggest that benzene exposure causes non-Hodgkin's lymphoma?
A No, I don't agree with you because you -
Up till now you've been pointing my attention to specific numbers and asking very specific questions. I have no choice but to answer "yes" or "no" to your question.
But when you say whether I interpret this study as a supportive evidence for the association, the answer is no, because there are other numbers that I look at which you did not point to. In fact, the statement - the very last sentence made by the authors themself -- Allow me the luxury of reading you this. "The possible links with NHL are all provocative new observations."
Even the authors themselves did not make a definitive conclusion.
MR. HYDE: Let me object as

nonresponsive.
Q Let me see that, please.
A (Tendering)
Q Does it not say on the first page:
"Workers with 10 or more years of benzene exposure had a relative risk of developing non-Hodgkin's lymphoma of 4.2 (95t confidence interval = 1.1-15.9), and the development of this neoplasm was linked most strongly to exposure that had occurred at least 10 years before diagnosis (i.e., distant exposure)."
Is that a correct reading?
A That's a correct reading. Again I need to point out that that is one of the many, many analyses that they have done. You cannot interpret that entire study based on one or two numbers.
Q Have you ever seen any other documents or studies that at least suggest that there are environmental exposures such as benzene or solvent exposures that are a risk factor for non-Hodgkin's lymphoma?
A No. I have done a very complete analysis of the scientific literature including some of the studies I have done, and my conclusion is no.
MR. HYDE: That's not what I asked you. Let me object to the

responsiveness.
Would you read that question
back, please.
THE COURT REPORTER: Question by
Mr. Hyde: "Have you ever seen any
other documents or studies that at
least suggest that there are
environmental exposures such as
benzene or solvent exposures that are
a risk factor for non-Hodgkin's
lymphoma?"
A I have looked at quite a few studies.
(By Mr. Hyde)
Q And some of those studies suggest that.
benzene exposure is a risk factor for non-Hodgkin's
lymphoma, correct? I'm not asking whether you agree
with them. I'm asking whether the studies at least
stand for that limited proposition.
A I guess I don't understand what you mean by
"suggest." If the relative risk is 1.1, is that a
suggestion?
MR. HYDE: That's not my
question. I object.
A But that gets -- I have to understand what
you mean by "suggest."

(By Mr. Hyde)
Q I appreciate that, Dr. Wong. .
Dr. Wong, Exhibit 6 is a group of studies that were sent to you by Mr. Colbert or somebody at his law firm, correct?
A Yes.
Q My question to you was: You are aware, are you not, that there are certain publications or studies that suggest that environmental exposures, specifically exposure to benzene, is a risk of non-Hodgkin's lymphoma? I'm not asking whether you agree with those studies. I'm asking you: You are aware that that association or that risk has been asserted in a publication?
A I understand your question completely.
What you are asking me is: Regardless of whether I agree with the author or not, did the author make a statement or by any other means indicate that they believe there is some kind of suggestion for such an association.
Again, I have to ask you: What do you mean by "suggest"? Sometimes they simply*listed the risk ratio - the relative risk - as 1.1. They didn't really say what they feel about 1.1. Is that a suggestion or not? I don't know what your criteria

is. I'm not trying to give you a tough time.
Q I'm not asking you anything about the validity of the author's work such as his relative risk that he found or his SMR or whatever. What I'm asking is very simple; and it is this: You are aware that certain researchers have suggested that there are environmental risk factors such as exposure to benzene and that those are risk factors for the development of non-Hodgkin's lymphoma? That is true, isn't it?
A Some people hypothesize that, but I don't know whether they -- Well, that's not the same as suggest based on data. That's two different stories. You can hypothesize without data.
Q I'm going to show you one of the articles that was sent to you by Mobil's lawyers entitled "Increasing Incidence of Non-Hodgkin's Lymphoma: Occupational and Environmental Factors," by Pearce and Bethwaite.
A Right.
Q In that document on Page 5498, it states: "In particular, benzene exposure increases the risk of non-Hodgkin's lymphoma and is suggested it may be due to its effect on the immune system, but it also appears that the number of clonal chromosomal

aberrations is especially large in non-Hodgkin's patients with a history of occupational exposure to organic solvents," correct?
A Yeah, you're talking about two things. The first part is on benzene, and the second part is on organic solvents in general.
Q Yeah. And organic solvents have the potential to have benzene as either a component or a contaminant, correct?
A Some may; some may not.
Q But my simple question to you earlier today was: You are aware, whether you agree or not, that there have been some researchers who have indicated exposure to benzene is a risk for the development of non-Hodgkin's lymphoma?
A We are back to the same situation again. If you equate a real statement made - actually made by the author saying, "Based on this study we suggest the following association," I don't remember seeing that kind of statement. But if I answer "no" to your question, I don't know what your criteria for suggestion is. You may say, "Wait a minute, Dr. Wong. Included in your pile of studies there is one reporting a relative risk of 1.2. Isn't that a suggestion to you?"

Q Isn't it?
A I mean, I don't know whether it is.
Q Well, again, I'm not asking you to discuss the validity based on your opinions as to whether that's an appropriate statement or not. I'm just asking you: You are aware that researchers have suggested the association, whether it is valid or not?
A Okay. Let's go back to the example. If I see a study reporting a relative risk of 1.2 and a 95 percent confidence interval, then I would really say it's really not that suggestion at all, even based on that study alone. Even if we accept the number at face value, I'm saying that's not a suggestion.
Q But now we have a study, in China anyway, as it relates to non-Hodgkin's lymphoma where the authors stated greater than 10 years exposure yields a relative risk of 4.2 for the development of non-Hodgkin's lymphoma, correct?
A Yes.
Q Are you familiar with the Notice of Intended Change for benzene published in Applied Occupational Environmental Hygiene in July of 1990? This is the °ACGIH Notice of Intended Change for Be nzene.1) Are you familiar with this document?

A I don't -- They have revised that a couple of times. I'm sure you are aware of that. I have looked at the latest version, I think.
Q Do you have that with you?
A I don't have that with me.
Q The 1990 version on Page 459 states:
"Prolonged cumulative exposures were judged more important for human benzene carcinogenicity than maximum peak exposures."
And the authors concluded that there was a significant association between occupational benzene exposure and the occurrence of leukemia, all lymphopoietic cancers, and non-Hodgkin's lymphopoietic cancers.
Are you aware that that was in --
A Certainly I would disagree with that statement.
Q Are you aware that it was in the document that I've shown to you?
A Oh, I have looked at that document: It's not that I remember that specific that statement, but certainly I have looked at that document.
Q That was published in 1990, correct?
A As I said, I don't know whether we are looking at the same version; but I have looked at the

proposed notice.
Q .That's the 1990.
A The one that you are holding in your hand is 1990?
Q Don't you agree with me that there can be differences amongst scientists as to certain scientific matters?
A I'm sure scientists disagree, lawyers disagree; husband and wife disagree. Don't tell me I'm hitting home with the last one. You're smiling.
Q In your mind, Doctor, there is the possibility that benzene may cause non-Hodgkin's lymphoma, but yet in your mind it hasn't been proven; is that true?
A No. As a scientist I rely on scientific evidence; and when -- I hate to go back to the same issue again and again. When I look at all the studies on this subject, I just don't see the evidence.
Q Well, I'm looking here at Table XIII of the Mobil study and looking at cancers of other lymphatic tissue for maintenance workers employed greater than six months in a maintenance craft at the Beaumont refinery. And the SMR's are 205 and 443, both of which are statistically significant. If there was an

environmental cause for these excesses of other lymphatic tissue amongst the Beaumont refinery maintenance workers who worked more than six months, wouldn't you agree with me that the most likely cause is either their employment at the refinery or their exposure to benzene?
A Well, I think I agree with you and your earlier statement that this study is not specifically on benzene. So, all we can talk about is employment And if we are talking about employment and non-Hodgkin's lymphoma, you should really look at Table XIV and not Table XIII, because Table XIV analyzed duration of employment specific to non-Hodgkin's lymphoma; and certainly you don't see any trend at all. In fact we did a trend test, and it was not even close to being significant.
Q But the fact is that for each of the duration of employment categories, there were more observed non-Hodgkin's lymphoma deaths amongst the maintenance craft workers at the Mobil Refinery as compared to what was expected. Mathematically that is true, isn't it?
A Mathematically it's true, and we went through how the numbers are and all that. Again, if indeed employment is the cause of non-Hodgkin's

lymphoma, then as we have a longer employment, the risk should go up. But that's not the case here.
Q Well, that's not what your data has shown to date. You are not sitting here saying that there are not other Mobil workers who have died of non-Hodgkin's lymphoma since 1987 that could change that trend, correct?
A Well, I mean, if we update the same study in another ten years, I don't know what the results are. I can only tell you.-- I can only form my opinion based on what I have now.
Q Doesn't it in any way alarm you that for cancers of other lymphatic tissue for those maintenance workers that there are statistically significant excess deaths amongst those groups of workers?
A I would be concerned if we see an upward trend in terms of length of employment. That tells me that it may not be benzene, but certainly it may be related to employment in general or some other exposure. But that's not the case here.
Q Let's talk about that. For maintenance workers who worked greater than six months in a maintenance craft at the Mobil Refinery, did you look and perform a trend analysis concerning cancers of

other lymphatic tissue? Specifically that category?
A It's a long question.
Q Okay. Let me ask it again.
Dr. Wong, did you or Dr. Raabe conduct a trend analysis for male workers who worked more than six months in a maintenance craft job at the Mobil refinery specifically looking for trends in employment for cancers of other lymphatic tissue? That category.
A No, because it's not a meaningful category. The table that we have, Table XIV, is more meaningful because we break it down by non-Hodgkin's lymphoma and multiple myeloma.
MR. HYDE: Let me object to the nonresponsive portion of the last answer.
(By Mr. Hyde)
Q Does this study, Exhibit 3 or 3A, specifically concern Mr. Barrett's risk of a benzene-related illness?
A As I said earlier, in forming my opinion I rely on a lot of studies including this one; so, it's part of it. It's not the only study that I rely on.
MR. HYDE: I object to the answer.

(By Mr. Hyde)
Q Do Exhibits 3 or 3A stand for the proposition that Mr. Barrett wasn't exposed to benzene?
A - Not exposed to benzene?
Q Yeah.
A I don't know whether he was exposed to benzene or not.
Q That is not what I'm asking.
A I'm getting confused.
Q Does Exhibit 3 or 3A, the Mobil epidemiological study, stand for the proposition that Mr. Barrett wasn't exposed to benzene?
A I don't think the report -- If I understand your question correctly, I don't think the report addressed the issue of whether the plaintiff in this particular case was not exposed to benzene.
Q Exhibits 3 and 3A do not concern specific benzene exposures at the Mobil Refinery, correct?
A We did not do any analysis specific to benzene exposure; but to the extent that workers in this study were exposed to benzene, then we have studied the effects of benzene exposure at the refinery.
MR. HYDE: Let me object to the

nonresponsive-section.
(By Mr. Hyde)
Q Are all employees who were included in Exhibits 3 and 3A, the epidemiologic study at Mobil Refinery in Beaumont, exposed to benzene?
A Not in the entire study.
Q Would you agree with me that there were different groups of workers who were exposed to different levels of benzene as it pertains to the workers included in the Mobil study in Beaumont?,
A Certainly.
Q Would you agree with me that workers within maintenance had different levels of benzene exposure between maintenance crafts, such as electricians may not be exposed to the same amount of benzene as compared to pipe fitters, correct?
A I would agree with that.
Q I assume that you, Dr'. Wong, if you would have wanted to, could have analyzed how many pipe fitters died of a lymphohematopoietic cancer. If you would have so desired to look for that information, you could have done that, correct? .
A I don't remember the details of the employment history.
Q It's possible?

A If the employment history actually record the specific craft, then theoretically it's possible, provided all the records are there - all the old employment records are there.
Q If some entity knows that a chemical or a process poses a risk of harm to a worker but does not inform that worker of the risk of harm, does that represent to you knowing indifference to the safety of that worker?
MR. COLBERT: I object to the form of the question.
A I think we have to be a little bit specific because certainly with your background you know that we are exposed to all kind of chemicals in most situations. So, whether something poses a harm or not depends on the level of exposure. And certainly if we know that at a certain level that substance would produce some health effect, then - and at the same time the workers are exposed to the same level, then we should inform the workers. If the levels are different, then is a different story.
Q You recognize that the pipe fitter occupation is one of the more highly-exposed occupations as it relates to benzene in a refinery, correct?

A Yes and no.
Q Well, based on what you have seen over the years, is that correct? You have seen, for instance, the Mobil analysis. The pipe fitting job was one of the higher-exposed job classifications?
A (Reviewing document) Yes, the PWA, according to the document that you showed me, was less than 10 PPM.
MR. HYDE: .That's not what I asked you, Doctor.
I object to the responsiveness.
(By Mr. Hyde)
Q My question to you was: Do you recognize that pipe fitters who work in the refinery typically have one of the higher levels of benzene exposures in a refinery? That's correct, isn't it?
A I'm not sure about it. It depends on their work practice, it depends on where they work and so on. I mean, I --
Q okay. Let's ask it this way: What maintenance craft or job title are you aware of for workers who work in a refinery that have higher potential exposure to benzene than a pipe fitter?
A I don't have specific numbers, but one job title that I remember - and I was quite surprised

when I learned it for the first time - actually was the job title called analyst, someone who actually go out to collect sample. In the old days I guess they just get some sample from the main stream and they turn the valve off and then there's some spill and so on and they carry, I guess, a bottle of that product back to the lab and do analysis, you know.
Q That was one of the most highly-exposed occupations, correct?
A I don't know whether that's the most highly-exposed, but I was surprised in the old days that was their work practice. So, it's really --
Q Do you know the allegation here is that Mr. Barrett had benzene-containing streams go onto his clothing while he was breaking open pipes? Do you know that?
MR. COLBERT: Objection. Assumes l8 facts not in evidence.
A I don't know that; and as I said, they have Dr. Fowler to handle the exposure assessment. I'm not the one.
MR. HYDE: I object to the responsiveness.
(By Mr. Hyde)
Q Dr. Wong, what else do you plan on doing as

it relates to your work in this case?
A I don't know at this point. I guess if I am not asked to do anything else, then the next thing I would do is, I guess, to testify at trial. I don't know what the lawyers have planned for me.
Q As we sit here today, you have no other plans relative to your work in this case; is that correct?
A No. But I would like to --
Q Let me ask you this. We had a double-negative going here.
Do you plan on doing any additional work as it relates to this lawsuit?
A Well, one thing for sure. I would like to read my deposition transcript if nothing else. That's something I would like to do.
Q Any other work --
A No, I'm not planning to do anything else.
Q Do you plan on making any exhibits or demonstrative aids relative to your testimony in this . case?
A I'm sure if we do go to trial I would like to have some made.
Q Have you made, as we sit here today, any demonstrative aids as it concerns your testimony in

this lawsuit?
A You overestimate me. I'm not that well planned ahead. No, I have not done anything.
MR. HYDE: That's all the questions I have.
MR. COLBERT: We reserve our questions until the time of trial.
g MR. HYDE: Thank you, Dr. Wong.
g THE WITNESS: You're welcome.

(WHEREUPON, THE DEPOSITION WAS CONCLUDED AT 4:05 P.M.)

THE STATE OF TEXAS
COUNTY OF HARRIS
I, DAVID S. SMITH, a Certified Shorthand Reporter for the State of Texas, hereby certify pursuant to the Texas Rules of Civil Procedure-and/or agreement of the parties present to the following:

That this deposition transcript is a true record of the testimony given by OTTO WO NG, Sc.D., F.A.C.E., the Witness named herein, on October 8, 1997, after said Witness was duly sworn by me;

SWORN TO AND SUBSCRIBED by me in Houston, Texas, on this the 1997.

Certification No.: 4166
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