IN THE CIRCUIT COURT FOR THE THIRD JUDICIAL CIRCUIT
MADISON COUNTY, ILLINOIS

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| RONALD R. THOMPSON, | ) | |
| | ) | |
| Plaintiff, | ) | |
| | ) | |
| vs. | ) | CAUSE NO. 05-L-301 |
| | ) | |
| MIDAS, INC., et al., | ) | Asbestos Personal Injury |
| | ) | |
| Defendants. | ) | |

DISCOVERY DEPOSITION OF DR. SHELDON H. RABINOVITZ
Taken on behalf of the Plaintiff
January 31, 2006

Kevin J. Weichman, CSR, CCR
ILLINOIS CSR NUMBER: 084-003189
MISSOURI CCR NUMBER: 915

INDEX OF EXAMINATION



E X H I B I T S



(ORIGINAL EXHIBITS RETAINED BY REPORTER TO BE ATTACHED TO MR. KRAUSE'S TRANSCRIPT.)

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THE DISCOVERY DEPOSITION OF DR. SHELDON R. RABINOVITZ, produced, sworn and examined on behalf of the Plaintiff, on Tuesday, January 31, 2006, between eight in the forenoon and five in the afternoon, at the BWI Airport Marriott, 1743 West Nursery Road, Baltimore, Maryland, before KEVIN J. WEICHMAN, a Certified Shorthand Reporter within and for the County of St. Louis, State of Missouri.

A P P E A R A N C E S

The Plaintiff was represented by Mr. Andrew A. O'Brien, of the O'Brien Law Firm, PC, One Metropolitan Square, 211 North Broadway, Suite 1500, St. Louis, Missouri 63102.

APPEARING TELEPHONICALLY: The Defendant, Pneumo Abex Corporation, was represented by Ms. Anita Kidd, of the law firm Armstrong, Teasdale, LLP, One Metropolitan Square, Suite 2600, St. Louis, Missouri 63102-2740.

The Defendants, Ford Motor Company, General Motors Corporation, and DaimlerChrysler Corporation, were represented by Mr. Robert S. Krause, of the law firm Dickinson Wright, PLLC, 500 Woodward Avenue, Suite 400, Detroit, Michigan 48226-3425.

APPEARING TELEPHONICALLY: The Defendants, Riley Stoker Corporation, CertainTeed Corporation, McKesson Corporation, and DaimlerChrysler Corporation, were represented by Mr. James J. Bentivoglio, of the law firm Heyl, Royster, Voelker & Allen, Mark Twain Plaza II, 103 West Vandalia, Suite 100, P.O. Box 467, Edwardsville, Illinois 62025.

APPEARING TELEPHONICALLY: The Defendant, Volkswagen of America, Incorporated, was represented by Mr. James Toohey, of the law firm Johnson & Bell, Ltd., 33 West Monroe Street, Suite 2700, Chicago, Illinois 60603-5404.

APPEARING TELEPHONICALLY: The Defendant, T.H. Agriculture & Nutrition, LLC, was represented by Mr. Peter Maginot, of the law firm Lathrop & Gage, LC, 10 South Broadway, Suite 1300, St. Louis, Missouri 63102.

APPEARING TELEPHONICALLY: The Defendant, Mazda, was represented by Mr. Kevin Marquitz, of the law firm McGlynn & Luther, 500 North Broadway, Suite 1515, St. Louis, Missouri 63102.

APPEARING TELEPHONICALLY: The Defendants, John Crane, and Cleaver Brooks, were represented by Mr. Mark Tivin, in association with O'Connell, Tivin, Miller & Burns, LLC, 645 Tollgate Road, Suite 220, Elgin, Illinois 60123.

APPEARING TELEPHONICALLY: The Defendants, Ford Motor Company, and General Motors Corporation, were represented by Mr. Ryan McQueeney, of the law firm Sanchez, Daniels & Hoffman, 333 West Wacker Drive, Suite 500, Chicago, Illinois 60606.

APPEARING TELEPHONICALLY: The Defendant, Midas, Incorporated, was represented by Mr. Keith Whitson, of the law firm Schnader, Harrison, Segal & Lewis, LLP, 2700 Fifth Avenue Place, Pittsburgh, Pennsylvania 15222.

APPEARING TELEPHONICALLY: The Defendants, DAP, Incorporated, Zurn Industries, Foster Wheeler Energy Corporation, and Flowserve US, Incorporated, f/k/a The Duriron Company, were represented by Mr. Jason Kennedy, of the law firm Segal, McCambridge, Singer & Mahoney, 330 North Wabash, One IBM Plaza, Suite 200, Chicago, Illinois 60611.

The Defendant, Borg-Warner Corporation by its Successor in Interest, BorgWarner Morse TEC, Inc., was represented by Ms. Pamela T. Broach, of the law firm Sennes, Bower, Sennes, 250 West Pratt Street, Baltimore, Maryland 21201.

APPEARING TELEPHONICALLY: The Defendant, American Honda Motors, was represented by Mr. Anthony Goldner, of the law firm Wilson, Elser, Moskowitz, Edelman & Dicker, LLP, 120 North LaSalle Street, 26th Floor, Chicago, Illinois 60602.

IT IS HEREBY STIPULATED AND AGREED by and between Counsel for the Plaintiff and Counsel for the Defendants that this deposition may be taken in shorthand by Kevin J. Weichman, a Certified Shorthand Reporter, and afterwards transcribed into typewriting, and the signature of the witness is waived by agreement of counsel and the witness.

* * * * *

MS. BROACHE: I just want to put something on the record real quickly. This is Pamela Broache. I am an attorney for Borg-Warner Corporation, with Sennes locally.

I just want to place on the record that Borg-Warner has designated Dr. Rabinovitz as an expert witness for the purposes of this case.

DR. SHELDON H. RABINOVITZ,

of lawful age, being produced, sworn, and examined on the part of the Plaintiff after answering "I do" to the oath administered by the court reporter, deposes and says:

[EXAMINATION BY MR. O'BRIEN:]

Q. (BY MR. O'BRIEN) Would you state your name for the record, please.

A. Sheldon H. Rabinovitz.

Q. You heard the comments by counsel at the beginning of the case. Are you aware that you were endorsed by Borg-Warner?

A. I talked to her about a half-hour ago and she mentioned that.

Q. So when is the first time you became aware that you were endorsed as an expert witness by Borg-Warner in this case?

A. About a half-hour ago.

Q. I will try and talk to you about the case, and sometimes we will get into some general information. So it may go a little back and forth, okay, Doctor?

A. Yes.

Q. Did you bring a current CV?

A. It's coming. I don't have it right at the moment.

Q. But there is one on its way and I can bring it home with me?

A. Certainly.

Q. Can you tell me what you brought with you today that would constitute your file in this case?

A. First, there are two depositions of Mr. Thompson. There is a Plaintiff Answers to First Set of Interrogatories. There is one page that indicates what we received from the attorneys.

There is our billing records for this case, some transmittal letters, Social Security Administration records. There are some notes that one of the people, who works with me and helped me with this case, prepared.

And then there is the report that we prepared and notice of deposition. And I also, a few days ago, received part of the deposition of Wesley Erps, who worked at a Unarco plant where Mr. Thompson also worked.

I also had in my file some records of purchase of asbestos by the Unarco, which then became, I think, Owens-Illinois or something like that.

MR. O'BRIEN: Okay. Can I mark the last two items as exhibits, please.

(PLAINTIFF EXHIBIT NOS. 1 AND 2 WERE MARKED FOR IDENTIFICATION.)

Q. (BY MR. O'BRIEN) Doctor, did you prepare a

report in this case?

A. Yes.

Q. What's the date of that report?

A. The date is January 13th, 2006.

Q. And did you prepare that report on your understanding that you would be in -- contacted and retained to be an expert witness in this case?

A. Yes.

Q. Who did you prepare that report on behalf of?

A. It was prepared at Mr. Krause's request, and, my understanding, it was to look at potential exposures Mr. Thompson had to asbestos with regard to his work as a mechanic, primarily American automobile manufacturers.

Q. And the date of that report is January 13th, 2006?

A. Yes.

Q. And that's the report that was provided to me by the -- General Motors, Ford and Chrysler pursuant to your endorsement.

In that report it itemizes on Page 1 the materials you said you reviewed. And if you can look at Page 1 of your report.

A. Yes.

Q. It says, "Answers to Defendant's First Set of Interrogatories," and then it mentions two depositions of Ronald Thompson; is that correct?

A. Yes. That's correct.

Q. You said, before the deposition, you have Social Security records. Did you receive them at the time and did you review them prior to preparing this report?

A. I didn't look at them until -- I don't know exactly when we got them, but I looked at them after I prepared the report.

Q. So you didn't rely on those in preparing your report and generating your opinions in your report in this case?

A. That's correct.

Q. What we have marked as Exhibit 1 and Exhibit 2, did you review them prior to your preparing your report and giving your case-specific opinion in this case?

A. No.

Q. And when did you actually receive them?

A. The deposition, I think there is some e-mail dates on there. I think we got those a few days ago.

Q. January 26? Maybe you can look at it and tell me, Doctor.

A. That sounds about right.

Q. And if you look at Plaintiff's Exhibit 2, when did you receive those documents?

A. I received those this morning.

Q. And this is January 31st.

And had you prepared any supplement to your report in this case?

A. No.

Q. Let me ask you, when did you first get contacted in this case?

A. I can't tell you the exact date, but we got materials around November 21st of 2005.

Q. Do you have your billing records, Doctor?

A. Yes.

Q. Can you just look at those and tell me when you did the work in this case to generate this report. Would those billing records let you give me that answer?

A. I will tell you in a second. The first entry is getting the documents, so that is 11/21. It looks like this is just the first bill, and it looks like what it has is some of the -- yeah, it looks like -- I would say that is about when we got it.

Q. May I look at the billing, please?

A. Yes.

Q. From looking at the billing records, can you tell me when you first looked at this case and when you would have signed off on the report?

A. It looks like I initially looked at it 12/02 and reviewed some of the materials, and then on 1/13 some additional review and --

Q. Tell me -- sorry, Doctor. Tell me what you did on 12/02, how much time you put in reviewing this matter. You yourself.

A. Has an hour and a half for reviewing material.

Q. From your billing records, the next time that would indicate that you reviewed this matter was, what, January --

A. 13, where I also prepared the report.

Q. What did you bill on January 13th?

A. Three hours.

Q. So in the time-preparation report, you billed four and a half hours for your review in the matter?

A. Yes.

Q. And three of those were on the date of the report issued, January 13th?

A. Yes.

Q. Thank you, Doctor. Is that a typical amount

of time that you would spend preparing a report yourself, the time you would put into it?

A. Depending on the case and the amount of material, that is somewhat typical.

Q. If you were to have supplemented, in this case, your report, do you think you could have done it within two to three hours, of your work product?

A. Yes.

Q. And you haven't done that before today?

A. Supplement?

Q. Yes.

A. I haven't supplemented this report.

Q. Thank you, Doctor. And just a little bit on your background.

You are currently employed by S-O-M-A?

A. Which stands for Sandler Occupational Medicine Associates.

Q. When did you join them?

A. I did some consulting work with them, starting in around 1984, and then joined full-time in 1989.

Q. Has that been your sole and full-time employment since that time?

A. Yes.

Q. When did you acquire or have you acquired a

part-ownership interest in that company?

A. I think within the first two years.

Q. Let me ask, why did you become an owner of the company or a part owner?

A. I believe there was -- I don't remember whether I came in owning anything or not, but there were certain dollar volumes. If I generated so much business, it would increase the amount of ownership.

Q. And would that include business you would work directly and business you would generate, to people having work for you in the company?

A. Yes.

Q. And when you joined SOMA, how big was the business?

A. How large was SOMA?

Q. Yes.

A. I believe it was about six or seven people.

Q. And how big is it now?

A. Now, I believe we're over 30.

Q. And do you believe that your work at SOMA has contributed to the growth of the company?

A. Yes.

Q. Let's take since -- and has that been a steady growth over time?

A. I wouldn't say steady, no.

Q. Tell me real quick how SOMA has grown.

A. I think the last five years, six years, there has been considerably more growth than in the previous -- in the whole time the company was in existence.

Q. Would you attribute a lot of that growth to your work in the company?

A. I think there is a distribution. It is certainly not just me.

Q. And do you have people that have worked for you and report to you in the work of SOMA?

A. Yes.

Q. If I've got this right, Doctor, you were born in 1944?

A. Correct.

Q. And you are now, what? Excuse me for asking.

A. 61.

Q. So the greatest growth that you have seen in the company in the last five or six years has been since you have been 55 and older?

A. Yes.

Q. Did you plan -- when you were 55, was it your thought that you should slow down and retire?

A. If I had enough money, I would have slowed

down, yes.

Q. Do you have any plans in the future to retire or leave the company? Have you made any plans at this time?

A. No.

Q. Thank you, Doctor.

A. I still have kids in college.

Q. I take it you still enjoy your work?

A. I do.

Q. In preparation for this deposition, have you had any conversations with attorneys that retained you in this case?

A. Yes.

Q. Have you had conversations with anybody other than attorneys working on this case?

A. Not other than an assistant who helped me prepare this.

Q. Have you had any conversations with any other experts retained in this case?

A. No.

Q. And when did you first have conversations about the case?

A. I don't remember the -- I think Mr. Krause called me and -- it was a short conversation. And then there were some other brief conversations about

scheduling a deposition.

And then this morning I talked to Mr. Krause, and we had some local counsel attorneys on the phone for a little while.

Q. And just so I know, who was on the phone? Who did they represent, do you know?

A. I'm assuming Ford, but I don't know for sure.

Q. And what did you talk about this morning?

A. They asked me -- they already had my report and I just reiterated my opinions about this case. And they also asked me if I read the deposition for Mr. Erp, and I said yes.

Then they provided me with some records regarding the purchase of amosite by the company where he worked. And I provided them with opinions of what I thought his exposure might have been while working for Unarco.

Q. And tell me exactly what you did to calculate your opinions at the time this morning.

A. Well, I had already reviewed the depositions and Mr. Thompson had already talked about handling insulation at the plant in his work as a maintenance person, and he described handling specifically some insulation that he believed was manufactured at the

plant.

Mr. Erp talked about some of the operations that included how the raw asbestos was handled, how products were made, how products were sanded.

He described a number of operations which would suggest a significant potential for airborne fiber release, and he also at several points indicated that the general plant environment was quite dusty.

Q. Did he indicate that he ever worked with Mr. Thompson?

A. I don't recall him saying he ever worked with Mr. Thompson.

Q. And when did you receive those -- let's move on, Doctor.

It is my understanding that you are not a medical doctor.

A. That's correct.

Q. And you do not give medical opinions in cases?

A. I do not give medical opinions, no. However, as a toxicologist, I do have knowledge of physiology.

Q. Let me talk to you about -- let me just finish the medical-doctor-type questions.

A. Okay. I am only mentioning that because there could possibly be some overlap.

Q. Maybe I will see if I can tailor my questions and see how the answers come out.

So you don't give medical opinions. You are not able to give a medical opinion as to whether or not Mr. Thompson has an asbestos-related disease?

A. No. I rely on others for that.

Q. You personally have not reviewed any medical records in this case?

A. No, I have not.

Q. And you don't have a medical opinion as to whether or not he has mesothelioma?

A. No, I have not personally attempted to make that determination.

Q. So you would not be able to give an opinion to either one of those matters in this case?

A. No, I would be relying on others.

Q. When I look at your report provided to me in this case, January 13th -- and you are familiar with the report you wrote?

A. Yes.

Q. And you reviewed it. To the extent you, on Page 7, you set out, it starts out with -- it says, "Expert opinion."

Do you see that, Doctor?

A. Yes.

Q. And I think the opinions are set out in four pages with a conclusion at the end that goes on to a fifth page?

A. Well, the actual opinion, I believe, is in the very first paragraph, and there is a summarization and the conclusion that not only reiterates my opinion, but also describes some of the bases for the opinion.

Q. And would you agree with me that all of those five pages that deal with your opinions offered in this matter deal with the subject of Mr. Thompson's working with friction products, which would include brakes, clutches, gaskets, and mufflers?

A. I don't believe gaskets are considered friction products.

Q. Let's say -- let's make it friction products, brakes, clutches, mufflers, and, additionally, gaskets. That's what you addressed in your opinions in that report, the five pages?

A. Yes.

Q. Nowhere in your opinions did you address, in that section, his work at the Unarco plant?

A. It is not in the opinion section. It is addressed in the background section.

Q. Let's look at what's in the background section. In the background section, on Page 4 of your report -- and when I say "Page 4," I am going by the numbers in the top left-hand corner. Okay, Doctor?

A. Yes.

Q. If I am correct, it looks like the second full paragraph, which has "Beginning in the summer of 1970," and then there are two full paragraphs that, from my looking at this, seem to deal with the Unarco plant. Is that correct, Doctor?

A. Yes.

Q. And when looking at that, and once -- when you had that information you recited in the report, were you prepared at that time, with the information you had, to offer an opinion as to his work at the plant?

A. I am getting a little confused with what you are saying.

Q. You called it the background section. There are two paragraphs in this background section that deal with Mr. Thompson's work at this plant, the Unarco plant.

I want to know, with that background, were you prepared to offer an opinion in this case as to his work at that plant?

A. An opinion regarding the degree of his exposure to asbestos?

Q. Yes.

A. No. I needed the supplementary information.

Q. So you have told me you've addressed it, the background. But what you had in there was not going to lead you to offer an opinion in this case as to that exposure?

A. Certainly not the opinion I have after reading it.

Q. Well, if you have an opinion, can you tell me where you expressed an opinion about exposure in this report?

A. I just put some background information. It doesn't actually --

Q. I want to be clear. Did you express an opinion about that background information, about apparent exposure or nonapparent exposure, in the report?

A. No.

Q. Thank you, Doctor.

I want to talk to you on -- and I believe I

will later get a copy of your CV, but are you an industrial hygienist?

A. Yes.

Q. And I believe you have a certification as an industrial hygienist?

A. Yes.

Q. So it is a field that you can receive a certification?

A. Yes.

Q. And do you continue to hold that certification?

A. Yes.

Q. And how long have you been a certified industrial hygienist?

A. Since 1974.

Q. And if I was to see your current CV, would it reference papers that you have written as an industrial hygienist?

A. It would reference all of the papers that I have written, yes.

Q. Would it reference the associations that you belong to, professional and trade associations?

A. Yes.

Q. Are all the trade or professional associations you belong to industrial hygienist

associations?

A. Yes.

Q. You mentioned toxicology. Do I take it that you are not a medical toxicologist?

A. I don't have a medical degree.

Q. You have a Ph.D.?

A. Yes.

Q. And what's the title of that Ph.D.?

A. The title is Doctorate in Physiology and Pharmacology with a major in toxicology from Wayne State University Medical School.

Q. And if I was to ask you to show me where it indicates you received the major in toxicology, what would you show me?

A. It wouldn't show you anything. You would have to look at -- my doctoral thesis was toxicology. You would have to look that -- I was also supported and grants came from the Department of Occupational Environmental Health, which is related to industrial hygiene and toxicology.

Q. And is it your view, is there a lot of overlap between industrial hygiene and toxicology?

A. No. The doctorate is almost all -- it is not industrial hygiene because it all dealt with toxicology.

Q. And in the course of preparing your Ph.D., how many courses did you actually take on the subject matter of toxicology?

A. I think there was two or three.

Q. And since finishing the Ph.D., have you joined or attempted to join any toxicology trade or professional associations?

A. No.

Q. Have you attempted to take any test that would have you certified as a licensed toxicologist?

A. No.

Q. Have you published any paper that you would say to me is in a toxicology journal and deals primarily with the subject matter of toxicology?

A. No, not in a toxicology journal.

Q. Subsequent to your Ph.D., how many -- let's take ongoing academic education -- how much ongoing academic education have you pursued in the field of toxicology?

A. I took a short course in toxicology. I think that might be the only pure toxicology short course.

Q. And when you say "short," can you define "short" for me?

A. Three to five days.

Q. When was that, Doctor?

A. Sometime around, I would say, '75, '76, that time frame.

Q. Since then you've not actively pursued or taken any course that's specific to toxicology?

A. That's correct.

Q. And forgive me if I've asked you this question, but you have not published in any text or peer-review literature on the subject matter of toxicology?

A. Not peer of toxicology, no.

Q. And what about industrial hygiene? Have you published in industrial hygiene journals?

A. Not peer-review journals.

Q. Have you published in the area -- or paper that would deal primarily with the subject matter of industrial hygiene?

A. Well, if I work with the federal government, there has been some documents that I either prepared or assisted in preparing that I think would be considered industrial hygiene.

There was also, with others, prepared something on the American Industrial Hygiene -- sponsored by the American Industrial Hygiene Association. I would have to look at the -- go

through the list.

MR. KRAUSE: Off the record.

(AN OFF-THE-RECORD DISCUSSION WAS HELD.)

Q. (BY MR. O'BRIEN) Let me do this. If I can focus on your report, beginning on Page 7. To the extent that I can, I will try and walk through this a little bit. Okay?

You said the first paragraph essentially embodies your opinions; is that right?

A. Yes.

Q. The first sentence says you reach a conclusion to a reasonable degree of scientific certainty.

Is that from your expertise in the field of industrial hygiene?

A. Yes, it is in industrial hygiene, because remember, also, industrial hygiene includes knowledge of toxicology and epidemiology.

Q. Would you say, Doctor, the main source of your opinions are from your work in the field of industrial hygiene? That's what you have been certified for for 30 years?

A. In this particular situation, with what I have been asked to do, yes, that's true, but it includes all my knowledge.

Q. And if I look at the end of the first sentence, Doctor, it says, if I can begin, "Did not cause or significantly contribute to cause his alleged asbestos-related disease."

There are two parts of that, whether or not he has the disease, you say "alleged," because you don't give medical opinions whether or not he has the disease?

A. Correct.

Q. And on the issue of cause, you say, "and does not agree that medical doctors would not attribute whether or not somebody has the disease and the actual cause of the disease."

That's a medical opinion?

A. Whether someone actually has the disease, I would say that's a medical opinion.

Q. And the actual cause of disease, would you not agree that's a medical decision -- opinion in a specific case, in Mr. Thompson's case?

A. No. I believe that some aspects of industrial hygiene and toxicology can also be used to support that conclusion.

Q. Can you tell me -- can you point me to one time in your career when you issued a report to a company saying "This is what caused a specific

person's disease"?

A. What caused?

Q. Yeah. I would like to know if you can tell me when you have, in your career, issued a report to a company saying "This is what caused this specific person's disease. I am defining here is the disease and here is the cause of it."

A. I can't think of anytime when I specifically did that.

Q. Let me ask you this. If you can't think of it, can you tell me if you have ever done that?

A. I say because I can't think of one, I can't tell you whether I did or I didn't.

Q. All right. Thank you, Doctor.

Then if we look at the next two lines, Doctor, maybe if I am smart enough, I will see if I can break this down.

Does one deal with dose and then one deal with the field of epidemiology studies? Would that be a fair characterization that they broke down the remainder of that paragraph into two areas?

A. Yes.

Q. Then maybe if you can tell me, so I can figure out how to address the rest of it, do you then, in the remainder of the opinion section, just

kind of put more flesh under your opinions or -- I am trying to figure out how to go through the remainder of the report with you, Doctor?

A. I think the next couple of paragraphs just talk about my experience, and mentions education, to put me in a position to draw those conclusions. Then the final two paragraphs talk about my knowledge of reviewing literature and some of the things said by that literature.

Q. If you can, do you think it is possible that you can show me what part of the opinion report deals with epidemiology and what part deals with dose, and I will try to separate my inquiring in both those areas, or do they overlap?

A. There is some overlap. I mean, pretty much when I refer to "epidemiology," it will say "epidemiology."

Q. Okay. Thank you, Doctor.

Were you attempting to do a dose reconstruction here? Or like when you address dose, how were you attempting to address dose in this case?

A. I have quite a bit of familiarity in knowing how much asbestos mechanics are exposed to when they are replacing brake assemblies.

So what I did in this case is I used that

knowledge, and then looked at what Mr. Thompson said, how he replaced brakes, what he replaced them on, and how long he did it.

So that permitted me to conclude that, on the days when he was doing brake work, it was most likely that he was exposed to some level less than point one fibers per cc of chrysotile asbestos.

It appears that he did that full-time work as a mechanic, where a certain percentage would be the replacement of brakes and some work with gaskets, where that was done for around 10 years, give or take.

Q. You say 10 to 15, in that range?

A. In somewhere, but possibly maybe a little more closer to 10. I am not saying that's exactly what it was.

What that tells me is that, number one, that would be a fiber-year dose that would not be significant in causing an increased risk of mesothelioma, based on epidemiology studies which have looked at cohorts of mechanics, many of which would have worked longer in the field, some of which would have worked less. The results of those studies basically don't see an increased risk in getting mesothelioma.

So Mr. Thompson falls within the category of mechanics where they have been studied and determinations have been made that they are not at increased risk. That complements the studies of exposure showing that they are exposed to very little asbestos.

Q. You are not saying that Mr. Thompson was part of any study or has been studied to reach that conclusion?

A. No. What I attempted to determine is that he fit in a category of mechanics who have been studied.

Q. But are they the steps you went through to create, in your mind, your belief of the dose that he might have been exposed to from that work over the years?

A. What's the question?

Q. I'm sorry, I withdraw the question.

Is that the process you went through and -- the evaluation process that you went through, about facts and literature, to evaluate what you believe to be his dose in this case?

A. I look at what he did to determine dose or a dose range and make a determination that that's within the cohorts of mechanics who have been

studied, and we look at their risk of getting disease.

Q. And when you say "within the cohort," are you trying to match apples to apples or are there some figures and actual measurements that you are trying to compare them to import into your analysis?

A. I just know that the various cohorts of mechanics who have been in epidemiology studies that -- some have done more work, some have done less work.

I wanted to make sure that Mr. Thompson wasn't in a group that perhaps would have been exposed to more asbestos from the brake work he did than would be the bulk of the mechanics.

Q. I am trying to find out what's more or what's less. Are there numbers that you are relying on that you could point me to?

A. Again, it's -- from reading the epidemiology studies and reviewing the descriptions of the people in the cohorts, I saw that some have worked all their lives, some have worked 10 or 20 years, and some have worked shorter time periods. Some have worked with trucks and worked on cars.

Q. I get it, but I am trying to maybe ask -- maybe I am not asking the right question.

You gave me a measurement of below point one fibers per cc; is that right, Doctor?

A. Yes, as a daily time-weighted average.

Q. When you say you're comparing him to others and cohorts and you are trying to define more or less and what are the measurements that you are relying on for those cohorts or if there is another source of measurements, can you tell me what that source is?

A. The measurement issue, on a daily basis, comes from my studies and many other people's studies which demonstrate that mechanics, while working on brakes, and that also includes clutches, are exposed to very low levels of asbestos. Again, less than point one.

Q. I am going to ask you about your studies -- tell me about other people's studies, which ones you relied on, that I can look for, to see that measurement that's been made.

A. There's a study by Blake. There's --

Q. Is that referenced in your report, Doctor?

A. I believe it is.

Q. All right. So that was part of what you considered and relied on in making your opinion?

A. Yes. There is a study by Rovelsburger. There are several NIOSH studies. They are not

referenced. There are a number of NIOSH studies where there are calculations of employee exposure was also less than point one. Not in all cases. There were some that were slightly higher, but there were those that were below point one, and there are my own personal studies.

Q. So when I am trying to -- in my mind you told me what you relied on from the literature to come up with the perceived dosage by way of measurement.

Let me talk about your studies, Doctor, that you have done that you would be relying on to make that calculation or at least have numbers that you can rely on?

A. I just did.

Q. You said "my studies." Can you tell me what they are?

A. My studies?

Q. Yes.

A. That's primarily a study I did associated with the postal service, where over a year and a half period we went into vehicle maintenance facilities once every six months.

Q. That's one study. I don't mean to interrupt. Any other studies that you classify --

A. I did one other study while I was at Ford, but I am not going to really use that because all -- I remember that it was below the limit, but I don't remember the actual number.

Q. So you are not going to rely on that?

A. Other than to know that it was a low number.

Q. Then I will not talk to you about that then. Any other ones?

A. That's it.

Q. Okay.

A. Well, I have actually done some studies on overhead crane brakes which is not exactly the same but it is similar. The brake pad is actually similar, although on overhead crane brakes the pad tends to be on the outside of the drum instead of the inside of the drum.

Q. When was that, Doctor?

A. I did a couple of studies. One was in 1990 and one was in 1984, I believe, or '85.

Q. And any other studies that you would be relying on in whole or in part?

A. That's all.

Q. Let me do them chronologically. Which would be the first one?

A. The post office study.

Q. That predates the Ford one?

A. Yes. I'm sorry, Ford was first.

Q. Were you studying a group of mechanics or what were you studying?

A. No, it was one mechanic who took a personal sample while he changed a set of brakes.

Q. Did he change all the brakes in a car?

A. I don't remember.

Q. Do you have the study with you so I could look at the measurements?

A. No, that's why I don't know the number.

Q. Do you know if they ground the brakes?

A. I don't remember. I am virtually positive that they didn't grind the brakes because that was a period of time when it is not necessary to grind brakes when replacing brakes on cars.

Q. When you say "study," did you consider it part of a group that you were studying or was it one of a test measurement. I don't know if that's the right word, Doctor.

A. Well, it was a study to determine what the exposure was to a mechanic who was replacing brakes on a car.

Q. How long did that take?

A. I believe it took less than four hours.

Q. Was there more than one brake job involved?
A. There was not more than one brake job. I just don't remember if there was one axle or two axles.
Q. Two axles being both the front and back of the vehicle, one axle being just one end of the vehicle; is that correct, Doctor?
A. Yes.
Q. Did you ever keep that -- I mean, if you were to go back to your file, do you have that study or was that your memory of doing it at the time?
A. Just my memory.
Q. Why did you do it, do you know?
A. I was told to do it.
Q. Who told you to do it?
A. A supervisor.
Q. And were you working for Ford at the time?
A. Yes.
Q. Let's take the next one in order. When did you work for Ford?
A. I worked from 1973 through '78.
Q. Was it during the course of your employment that you did that study?
A. Yes.
Q. The U.S. Postal Service study, and when did

you do the work?

A. Early '80s.

Q. Sorry, my last question of Ford. Did you publish the results of that Ford test or study?

A. No.

Q. The U.S. Postal Service study, are those results published anywhere?

A. No.

Q. And let's talk about the study then. Who were you working for when you did the study?

A. Science Applications -- SAIC which was known as JRB. I was with the subsidiary of JRB that was then folded into SAIC later.

Q. And what time period did you do the work?

A. Early '80s.

Q. I think you told me it was over a year and a half time period?

A. It was a year and a half study.

Q. How did you do the study?

A. We went into 56 vehicle maintenance facilities. We called them and told them that we were going to be coming and we were going to sample an employee, a mechanic, who would be spending the day replacing brakes on a vehicle, and that they were to do it in their normal procedure and we would be

taking both area and personal samples while they did it.

Q. Why were you doing the study? Who wanted it done? Was it the employers of the people at the U.S. Postal Service?

A. It was the U.S. Postal Service.

Q. What was their purpose in requesting the study?

A. They told me -- the OSHA standard requires employers to provide physicals for employees who work with asbestos over the reaction level, which was point one fibers per cc. So they wanted to know if they would, under OSHA, be required to give all their mechanics medical studies or medical exams.

Q. And if the results came in to show that it was below that number, then they would not be required to give that physical; is that correct?

A. Based on the OSHA standard, that would be correct.

Q. And when you say "called ahead," who would you be calling or why would you be calling ahead?

A. We would call ahead to the manager of the facility to make sure that they would schedule a mechanic to replace brakes because they didn't necessarily replace brakes on vehicles on a daily

basis.

Q. And where were these -- you said 56 locations?

A. Yes.

Q. Were they in a certain state or were they across the country?

A. They were in the Eastern region of the postal service which was Pennsylvania, Maryland, Virginia, Delaware. It might have been New York but I don't remember.

Q. 56 sounds like a lot of locations. Did you personally do the work or did you have a team?

A. We had a team and I was one of the members of the team.

Q. How big was the team?

A. It varied depending who was available. I would say we -- I don't remember the exact number in the chain, but about four to six people participated.

Q. Were you responsible for a certain number of sites or how did you break down your responsibilities?

A. I was the manager of the whole project and other people just did surveys, but I also did some of the surveys but I prepared the reports, handled the data.

Q. So in that 18-month period, was it daily ongoing or --

A. We would schedule the 56 sites and do them as fast as we could. But like I say, there were from four to six people doing it. I think it took several months to get all 56. I don't remember the exact amount. And then six months later we started it and do it again.

Q. Where were you based if you were in command of the project? Were you at a central location or -- is that where you were based most of the time?

A. I worked out of my office except on that project when I was out doing those surveys.

Q. How often did you do the surveys?

A. I have the data sheets from those surveys, and if they represent all of them, I think I did about 10 of them.

Q. So your direct observations are from the 10 that you would have done; is that right?

A. Well, I also reviewed everybody else's data.

Q. Of the 10 that you did, did you see -- were you in the presence of actual mechanics working on friction products, brakes, clutches and the like?

A. Not clutches. This was just brakes.

Q. Just brakes, okay.

Was that the sole purpose or were you trying to evaluate any other work procedure that they were performing?

A. No, just replacement of brakes.

Q. And were they installing new brakes at the same time?

A. It was a brake relining operation, although it may have included rebuilding the wheel cylinder also.

Q. There was a removal part of the process on the install part?

A. Yes.

Q. From your memory in that process, did you observe people grinding or arcing brakes?

A. I don't remember in mine any arcing being done.

Q. And what about grinding?

A. No.

Q. And I apologize, did you say the time frame was in the mid '80s?

A. Early '80s.

Q. Had you ever observed arcing or grinding of brakes before that time?

A. I've seen the machine. I don't know if I have actually seen it being used.

Q. You yourself never used it?
A. No.
Q. Your memory is you haven't seen it in use?
A. That's correct.
Q. Excuse me if I go back and forth a little bit. Are you familiar with any OSHA regulations that deal with the use of brakes while working with a grinder or an arcing machine?
A. I believe the newer OSHA standards talk about ventilation and specific practices, but the 1972 standard, which was in effect until 1986, I don't believe had any requirements for grinding other than to prevent employees from being exposed over the limit.
Q. Do you know of any -- if OSHA has ever made any recommendations on the use of a grinder or an arcing machine in working with brakes?
A. They have some pamphlets out. They may have.
Q. If you know, has the EPA ever considered recommendations on the use of an arcing machine or a grinder when working with brakes or friction products?
A. I believe that they do have some recommendations. I believe that they were influenced

by some work that was done at Mount Sinai which I believe later has been shown that some of that work was not accurate and overestimated some of the exposures that were associated with mechanics replacing brakes.

Q. And what do you believe the EPA's recommendations were or their position they wanted to take on it?

A. They issued some guidelines for mechanics replacing brakes, on how to do it.

Q. In the course of litigation, have you ever been retained by a company that made an arcing machine --

A. No.

Q. -- or a grinder that might be used in friction products --

A. No. I think, and I am hesitating because I know I was reviewing some material about some grinders, but I believe it was still associated with a mechanic who used the grinder, but I believe it was -- I believe the client was still a brake manufacturer and not the grinder manufacturer.

Q. Have you ever been -- sorry. Has anybody ever produced to you studies that have been done specifically when somebody is arcing or grinding

friction products?

A. Well, the Blake study has some measurements associated with grinding.

Q. And what about arcing, do you know of anyplace that you have seen measurements taken while arcing was being performed on a friction product?

A. It is my understanding that arcing is a grinding operation.

Q. Let me get back to the postal service for a second. You say you have that information -- that's not a study you brought with you today --

A. No, I didn't bring it with me.

Q. But it is part of your file? I mean your general --

A. I have some of the original data sheets that I filled out while I was conducting those studies.

Q. I think you said the study wasn't published. Is there a report that you generated that I could review?

A. There were reports that were generated and provided to the clients so we could get paid, but they are not available.

Q. So am I looking for -- even though I'm a savvy guy, I probably wouldn't be able to find it --

A. Others have tried. I went to the post

office, I went to the Eastern region and they all said they couldn't find it.

Q. How would you describe what's the best available material that's left of the result of that work?

A. The only thing that I have are my data sheets.

Q. And would they encompass all the data that you received during the course of this study or is it just data that you would have generated --

A. It is just the data sheets that I prepared when I was out there doing the sampling.

Q. Okay. So that if I reviewed that data, it would be from the ten or so times that you told me you were out -- the observations that you made directly and the measurements that you made?

A. Correct.

Q. So none of those measurements were of anybody grinding or arcing a brake?

A. I don't think so.

Q. Can you tell me what the nature of the measurements you were making were? I think you mentioned air sampling and --

A. Personal breathing zone and area air sampling.

Q. And roughly, do you know --

A. Also peak and time-weighted average exposures.

Q. If you can remember -- I know you don't have the documents in front of you -- did you do both types of testing all the time or did you do alternating --

A. They were always the same procedure. There were always a personal sample and an area sample and there was always a peak sample and a time-weighted average sample.

Q. And does any of your data indicate the peak sample would have exceeded the point one fibers per cc?

A. They did.

Q. How many did, do you know?

A. Estimating that the majority exceeded point one.

Q. What about then time-weighted average?

A. Most of them were below point one. There were a few that were above point one. On those that came back above point one, because the sampling was done by phase-contrast microscopy, the postal service asked us to have them analyzed by electron microscopy, which we did.

And the results for those that came back as being over point one with the phase contrast were found to be below point one when subjected to an electron microscopy analysis.

Q. And do you have those electron microscopy reports in your files?

A. No.

Q. When you say the time-weighted average, do you calculate that over a 40-hour workweek? Tell me what you meant when you -- I withdraw that question. Sorry.

Explain to me the numbers you would achieve and tell me what's the formula or technique that you are using to reach those numbers.

A. In industrial hygiene, a time-weighted average refers to a single shift. So it's done as a day, not a week.

So a typical time-weighted average would be an eight-hour time-weighted average. Adjustments are supposed to be made if it is longer than eight hours.

But in this postal study, I believe the shifts were eight hours, and so that is what we calculated. We would put the sampler on and let it go for the day, and then we also had some additional samples for the peak sample.

Q. So correct me if I am wrong. We are talking about the studies that you did -- personally generated in the study; is that right, Doctor?

A. Pardon?

Q. You have been telling me the results that you personally generated in this study?

A. No. I am telling you the results of all of the work.

Q. I'm sorry. But in the documents that you observed peak measurements in excess of one point fiber per cc?

A. I don't know if they were mine. They might have been others. I am talking about in -- I reviewed all the data. And I am saying in reviewing all of the data, not all of the eight-hour time-weighted averages came out below point one when using the phase-contrast analysis.

Q. So a number on the peak analysis exceeded the point one fiber per cc?

A. Most.

Q. And then when you went over to the time-weighted average numbers, even some of those exceeded the point one fiber per cc, the initial measurement?

A. There were some.

Q. And then they got reanalyzed by TEM, and you were able to satisfy yourself that those time-weighted average numbers came below the point one fiber per cc?

A. That's correct. I don't remember if it was TEM or SEM.

Q. Okay. Because there is a difference between SEM and TEM, isn't there, Doctor?

A. Yes.

Q. In your experience, what would you expect to be the difference, if you used SEM as opposed to TEM, in determining a fiber count?

A. It depends on how you do it and what -- your sampling protocols, but essentially the SEM is able to identify specific fibers that are asbestos from nonasbestos.

Q. How good would SEM be, as opposed to TEM, in counting OSHA-classified fibers that are under five microns?

A. It would be pretty good. The TEM has greater resolving power. But if you are looking at OSHA definitions, then the SEM would be fine.

Q. But if you were trying to reach those measurements, the TEM would be a more specific finder of those results?

A. TEM has greater magnification.

Q. And you don't know if they used SEM or TEM, that's what you are telling me?

A. I just don't remember.

Q. Is it the net result of the U.S. Postal Service study that you were able to give them results that showed the numbers would come in in the time-weighted average below the point one fiber per cc?

A. That's correct, and the peak samples were all below the limit for the peak sample at the time.

Q. And what was the limit for peak sample at the time?

A. They were 10 fibers per cc.

Q. Do you know if any of your samples were exceeding the peak sample -- the limit for peak sampling at the time?

A. No, none of them.

Q. Did you have to readdress any of the peak samples to go to TEM -- or SEM, sorry, whatever --

A. It may have been TEM. I am just saying I don't know for sure.

Q. Do you know if any of the peak sample test results were retested?

A. No. There was no reason to.

Q. The overhead cranes?

A. Yes.

Q. Let me just go back to the postal service. When you were doing the personal monitoring, where would the device be that you were doing the monitoring?

A. It would be on the lapel.

Q. And where would the air measurement be?

A. The area sample was 10 feet away.

Q. And you believe in the measurements that we talked about from the postal service, from your memory, none of them were taken through the process of grinding or arcing brakes that you observed?

A. None of the ones that I observed.

Q. And you can't tell me that any results that anybody gave to you resulted from the grinding or arcing on brakes?

A. I can't tell you.

Q. From your knowledge, do you think it would be in the 1980s that arcing and grinding would not be something that you expected from what you saw in the field?

A. Certainly on passenger cars there is no reason to do it. Some of these samples were also conducted on trucks. Some larger trucks, it would

not be unusual to have some grinding done in the early 1980s.

Q. Let's go to the overhead crane. You say -- is it two studies?

A. There were two studies.

Q. I think --

A. However, actually only one study involved a mechanic changing a brake.

Q. Let's deal with that one. Which one was that?

A. That was a 1990.

Q. And where did you do that study and who did you do it on behalf of?

A. It was done on behalf of General Electric Corporation.

Q. Was it in the course of litigation or other consulting work?

A. No. It was for litigation.

Q. So did you publish that study?

A. No.

Q. You say that involved working with a brake?

A. It involved the mechanic -- it involved several things, also determining asbestos emissions associated with the operation of the overhead crane, but it also included taking a personal breathing zone

sample while a mechanic changed an overhead crane brake.

Q. Was there more than -- the measurements that you took, was there more than one change of brake involved? Was it multiple brake jobs or friction product jobs or just one single job?

A. It was the brakes on one crane brake.

Q. Where were your samples taken from? Did you do an area sample?

A. For the changing of the brake, it was just a personal breathing zone sample.

Q. And you took that of the person who was doing the work?

A. Correct.

Q. Then who set that up? You did?

A. You mean -- when you say "set up," I am not sure what you mean.

Q. I apologize. The attaching of the personal sampling device and --

A. I am the one who calibrated the pumps and set everything up and attached it to the mechanic.

Q. In that -- did you observe the mechanic doing his work?

A. Yes.

Q. Did he grind those brakes?

A. No. It was a replacement.

Q. When you say "replacement," did he remove an old brake?

A. Yes.

Q. Did he blow it out with an air hose?

A. No.

Q. In the process of replacing, do I take it he installed a used brake or he installed a new brake?

A. A new brake.

Q. And what preparation work did he do in installing the new brake that he grinded?

A. He didn't grind it.

Q. Did he arc it?

A. No.

Q. I think you told me there is a distinction in the physical workings of an overhead crane brake as opposed to a vehicle?

A. Yes, typically.

Q. And can you describe to me what the lining -- the lining is on the --

A. Outside of the drum in an overhead crane brake, where it is typically on the inside of the drum on a vehicle brake.

Q. Does that make a distinction, in your mind, in the testing that you did?

A. Yes.

Q. So it wouldn't be a similar operation to working on a vehicle's -- brakes in a vehicle?

A. There are similarities, but it is not exactly the same.

Q. Do you have a copy of your results that you generated from that study?

A. I have a report that describes that test.

Q. Did you do a peak measurement and a time-weighted average measurement?

A. No.

Q. What measurement did you perform?

A. It was just a time-weighted average as they replaced the lining.

Q. And tell me, when they replaced the lining, was it a clip-on lining?

A. I believe there might have been some screws that had to be taken off. It is not suspended the same way a vehicle brake where there is springs that sort of allow it to move more.

Q. It is --

A. It is hinged.

Q. Why would you not do a peak sample?

A. Because it didn't involve -- see, a peak sample was taken on those operations in replacing a

vehicle brake where you would expect to have a peak exposure.

And that operation is when you're pulling the drum off and when you are taking an air hose or you are cleaning the brake assembly.

In an overhead crane brake, because the brake is on the outside of the drum, there is less accumulation. So you are not taking anything off that's going to cause a peak exposure. There is less potential for a peak exposure, and that's why we didn't do it.

Q. And forgive me, but going back to the postal service, was there local exhaust, ventilation, being applied by the postal service at the time?

A. There was a variety of conditions. There was one post office, I believe, where they had a local exhaust, but it ran the gamut to some sophisticated controls to still using an air hose.

Q. So sophisticated controls might include, what, use of a vacuum locally to soak up the --

A. It would have like an enclosure around the brake assembly, and it would be exhausted.

Q. So you observed people using those exposure control techniques when doing your postal service work?

A. I don't believe on any of the ones I did. In fact, I know on one I did, they were still using an air hose.

Q. On the overhead crane job, was it done in one day?

A. It was done in 20 minutes.

Q. Did you do any other work on that project?

A. Pardon?

Q. Did you do any other work on that study?

A. Yeah. That study also involved area sampling right at the crane brake -- crane drum -- or the brake lining/drum interface while it was operating, and then also taking various area samples around the overhead crane as it was operating and using the brakes.

Q. How far would they be away, the overhead -- I'm sorry, the general-area samples, what kind of distance are we talking?

A. Some of them were 30 feet away.

Q. During the operation of the actual vehicle with the brake on it?

A. During the operation of the crane. But we also had a filter that was within like a quarter of an inch of the lining/drum interface.

Q. And what did your results show?

A. Very little. We didn't believe any asbestos was measured on the floor and the concentration of asbestos right at the interface was very low also.

Q. Is it your belief that the study did show a measurement of asbestos from your measurements? It was detected?

A. I think at the interface there was something detected.

Q. Then you mentioned one overhead crane brake.

A. It was done in '84, but it only involved measurements of area sampling. Nothing of a mechanic working on the brake.

Q. So is it fair to say you wouldn't be relying on that study in your opinions here?

A. That's correct.

Q. You reference in your report, I think it is the end of the second full paragraph, you may have performed over 1,000 asbestos bulk samples in your career?

MR. KRAUSE: That's on Page 7?

MR. O'BRIEN: Yes.

THE WITNESS: Bulk and their samples.

Q. (BY MR. O'BRIEN) And you classified that as that work that you consider industrial hygiene work, collection of those samples?

A. Yes.

Q. And within that, whatever that number -- 1,000 or whatever the number is, have I missed any sampling that you recall or know would have been of a friction product or have we covered --

A. I also did some testing of brake pads in a study I did where I was drilling holes in brake pads and measured the exposure associated with drilling holes in brake pads.

Q. Let me just -- maybe because I tend to go back and forth too much, within those samples that you reference in the bottom of the second full paragraph, from your career, do you know of -- and I am going to take into account the latest one you just told me about, the drilling -- do you know of any other samples among that group or samples you took or remember to be from the use of friction products or measurements taken on friction product operations?

A. Right now that's all I can think of.

Q. I apologize. It is a little noisy outside, if you can't hear me.

A. It also smells good.

Q. You made reference to a drilling procedure or whatever. You didn't reference that before, have you, Doctor, that I have not missed or asked about

it?

A. Pardon?

Q. Is that something new that you have told me about?

A. It is not something new.

Q. It is something that we haven't discussed already in the deposition?

A. That's true.

Q. Tell me what it is that you are referring to, what the study was, when.

A. The date was mid '90s, and I was asked to determine what the exposures would be to a mechanic who has to drill holes in brake pads in actually relining the shoes using rivets.

Q. Who asked you to do that?

A. Otis Elevator Company.

Q. Was that in the course of litigation?

A. Yes.

Q. Was it a brake that would be associated with elevators? I'm just thinking of Otis. Or was it a brake involved in automobile work?

A. It was a brake used in elevators.

Q. Is that brake -- tell me, is that a similar brake to -- a similar mechanism to automobile work?

A. It was a disc brake.

Q. Not a drum brake?

A. They did use drum brakes also, but the pads that I was given to test were pads that would have been for disc brakes.

Q. Did you do the test of a worker using them in the field or did you do them -- later yourself perform a test?

A. I did it myself. You know what? I am making an assumption that they were disc brakes because they were small, but now that I think about it, even though they were small, they could have just been parts of a drum brake.

So I take that back. They were smaller pieces, but I don't know for sure if they were used on a disc brake or a drum brake.

Q. How small?

A. I think they were about three inches by five inches, something like that.

Q. When you did the manipulation, you didn't do it out in the field to kind of simulate someone working with it; is that right?

A. That's correct. I did it in -- we have an exposure chamber in our office.

Q. Tell me what you did at your office.

A. I put the pad, I believe, in a vice and

started drilling holes in it.

Q. And what kind of drill did you use?

A. It was a regular drill. I don't remember the bit size. It might be in the report. And I just made the pad look like Swiss cheese.

Q. And then what measurement -- were you taking a localized area measurement, or what measurement sample?

A. I took a personal breathing zone sample on myself. It might have been two actually. And one or two area samples.

Q. What did you get? What results?

A. The results were that the time-weighted average was, I believe, less than one point fibers per cc.

Q. Did you have a peak average?

A. There was a peak.

Q. What was the peak?

A. I don't remember the number, but it was higher.

Q. Was it higher than the permissible OSHA peak?

A. I don't remember.

Q. How long did you do the drilling for?

A. I think I stretched it out -- I don't

remember if I -- 10, 20 minutes. I would have to look at the report to refresh my memory.

Q. And what was the asbestos content of that disc?

A. I don't remember. It was a significant percentage, but I don't remember the exact percentage.

Q. Do you know who the manufacturer of it was?

A. No.

Q. So did you actually -- did you review anything that told you what the product formulation was, the content?

A. I don't remember if I took a piece and just had it analyzed to determine the asbestos content or not. I would have to refresh my memory by looking at the report.

MR. O'BRIEN: Doctor, let me just check the time. I need a little restroom break for a minute.

MR. KRAUSE: What about -- especially with that noise out there.

MR. O'BRIEN: I was actually just trying to see if I could just accomplish this and get it done. I was going to look at my notes. How are we doing on time, Bob?

MR. KRAUSE: It is quarter to 1:00.

MR. O'BRIEN: Let's go off the record.

(A SHORT BREAK WAS HELD.)

MR. O'BRIEN: Back on the record.

Q. (BY MR. O'BRIEN) You've consulted as an expert in litigation for a number of years; is that right, Doctor?

A. Yes.

Q. Would you say -- when did you first start?

A. I was working for Ford Motor Company when I was first asked to testify. About 1975, 1976.

Q. And just broadly, how many times do you think that you have given deposition or trial testimony in an injury-related lawsuit?

A. Deposition and?

Q. And/or trial.

A. Very roughly -- well, hundreds of times.

Q. And let's say the types of agents that might be involved in products. You've testified in asbestos numerous times before?

A. Actually, very few asbestos trials, but a fair number of depositions.

Q. And silica, silicosis cases?

A. Yes.

Q. And protective equipment cases?

A. Respiratory protection, yes.

Q. And benzene?

A. Yes.

Q. Lead?

A. Yes.

Q. And what other kind of agents or products that you can recall off the top of your head?

A. Isocyanates, solvents, indoor air quality, fungii, carbon monoxide.

Q. In any injury case, can you tell me if you have ever testified that the product of the person who retained you as an expert or the conduct of the person who retained you as an expert, you ever concluded or ever gave the opinion that their product or conduct caused or contributed to cause disease in the injured plaintiff?

A. Well, I have done plaintiff work, so in those cases, yes.

Q. How many times have you done that?

A. I think six, seven times, somewhere in that neighborhood.

Q. When did you do that and what was involved?

A. There was several carbon monoxide cases against General Motors. There was a chlorine case. There was a silica case.

Q. In those cases, were you prepared to give an

opinion that the person who retained you to give an expert opinion, that their conduct or product actually caused or contributed to cause the disease?

A. I was retained by the plaintiff to say that the vehicle or heater or boat or actions of the defendant caused the problem.

Q. In the rest of your cases, have you been giving opinions on behalf of defendants?

A. Yes.

Q. And in any -- I mean the rest of the cases. And has your opinion always been that the person who retained you, that their conduct or product didn't cause or contribute to cause the disease in the case?

A. If it went to the point of giving a deposition or trial testimony, if I thought it did contribute, I didn't do more work on the case.

Q. I think we met once before, right, Doctor?

A. I will be honest. I don't remember, but it is possible.

Q. And I think it involved a respiratory protective equipment case for Bullard? Do you remember that now?

A. I have done respiratory work for Bullard, but it's still -- this wouldn't be a St. Louis case.

Q. That would be right. I live in St. Louis.

In that case do you remember you were initially retained by Bullard?

A. And then transferred to U.S. Silica.

Q. And I was going to get there. Your initial opinion was Bullard's product had no role in causing or contributing to cause the disease; is that right, Doctor?

A. Probably.

Q. And after they resolved your opinion, you were then endorsed by the sand companies to say that their product didn't -- or their action didn't cause or contribute to cause my client's disease, silicosis; is that right, Doctor?

A. I believe they had adequate warnings, something like that.

Q. That their conduct didn't cause or contribute to cause my client's problem?

A. I don't remember exactly when it was and how you are referring to it, but I do remember the jury agreed with me.

Q. I know what happened. Thank you.

You've worked for Ford; is that correct?

A. Yes.

Q. And during the time that you worked for Ford, did you become aware that they were aware of

the potential problem with asbestos in brakes, in friction products?

A. That they were aware of a potential problem?

Q. Yeah.

A. Yes.

Q. And were you part of discussion groups as to what Ford should do or should not do about that?

A. Well, I know my testing showed it wasn't a problem.

Q. Was the purpose of your test to actually allow Ford to determine whether or not there was a problem with the brakes and what they should do?

A. I assumed that my results were used, in part, in their knowledge of the hazards associated with replacing brakes.

Q. And you think the results you generated contributed to whether or not they decided to continue putting asbestos -- or leaving asbestos brakes?

A. I don't know for sure.

Q. And during the time that you worked for Ford, do you have any other memory of being -- do you have any memory of them coming to ask you to do any additional work in the area of asbestos and asbestos brakes, besides discussions and the work that you did

in that one brake study?

A. That was the only job I did. I know I also assisted Mr. Lick when he was evaluating vacuum cleaners for use in cleaning asbestos-related material.

Q. And when did you do that? That was during the course of your employment?

A. Yes.

Q. And tell me about when that happened and what you participated in doing.

A. I don't remember the exact year, but he was conducting some experiments, and I think I helped him set something up, but he was the one principally involved.

Q. Do you have memory of any results you generated as a result of these experiments?

A. No, I don't remember the results.

Q. Do you know if, after that time, Ford ever asked you to help them develop a policy or position as to whether or not they should continue to have asbestos in the friction products?

A. They did not ask me.

Q. Is it fair to say then you were not part of the decision by Ford, if and when they made it, to not have asbestos in the friction products?

A. No, I was not part of that.

Q. I think I have maybe seen this somewhere before. You have worked on brakes in the course of working on your own personal automobiles; is that right?

A. Yes. I am a mechanic.

Q. And would you consider yourself a professional mechanic?

A. I think I can do quite a bit.

Q. Do you think the work you did was, being a member of -- strike that.

You didn't do that as part of your employment or profession.

A. Correct.

Q. So what you did was a member of the general population, you went off and worked on your own vehicles; is that correct, Doctor?

A. It is, except that maybe I have done more than -- I have a full car lift in my garage and an engine puller and extensive equipment.

Q. At any rate, would you say that you have done over 200-plus brake jobs in your time?

A. I know it is over 100. Whether it is approaching 200, I can't be sure.

Q. Have you ever yourself tried to do any

monitoring on measurements as to the release of asbestos when you've worked on brakes?

A. No.

Q. Do you employ any techniques or any -- I don't know what you call them in respiratory protection programs since it is not on the job site, but do you employ any devices when you are working on brakes, such as opening the doors or using a vacuum system exhaust, opening the windows?

A. Since I have been a part of studies that show that there is no hazard associated with working on brakes, that even when brakes still contained asbestos -- and I did my last brake replacement on an asbestos brake in 1984, I dropped the drum right on the cement, cleaned it up, and the dust went flying all over, because I know it is not harmful.

Q. And in that process then, would you keep the door closed and the garage sealed?

A. I actually like keeping the door open, if the weather is nice, but if the weather is not nice, no, the door is closed and it is not a problem.

Q. Did you ever use a grinder?

A. I have never found a need to use a grinder. There was one time when it was an extremely tight fit getting the drum over the linings, and within the

first couple of using the brakes, it's a perfect fit, and that's the easy way to do it.

Q. So you are familiar -- you do what you did, and when you put the brakes on, you might get a squeal out of them for the first number of times you used the brakes?

A. I am saying 99.9 percent of the time there was no problem. One time it was a tight fit, and just the normal use of the brakes for the first few miles wore down to a good fit.

Q. How could you tell you're wearing down the -- did you hear like a squeal from the brakes?

A. When I first put it on, there was a little brake drag, until it wore down.

Q. Have you ever testified for Borg-Warner before?

A. I believe I have given reports and depositions where Borg-Warner was involved.

Q. And have you, in your working as an expert in friction product cases -- would that include clutches?

A. Yes.

Q. And is it your belief that the asbestos fiber used in friction products was exclusively chrysotile?

A. Yes.

Q. So have you ever reviewed or received any document from any of the companies that have retained you as an expert that would show they ever used anything other than chrysotile in friction products, that would include either brakes and/or clutches?

A. I have not received anything; although, it is my understanding, in Australia, they have used amphiboles in friction products.

Q. And would you agree with me Borg-Warner's -- their primary base is in the United States and not -- when you are referring to Australia, you are not talking about Borg-Warner?

A. I am not talking about Borg-Warner. I don't know if they do work there or not.

Q. What about General Motors? Have they ever told you that they used anything -- or any other fiber-type materials for brakes or clutches other than chrysotile?

A. No.

Q. That includes clutches that are either automatic or manual form?

A. Yeah. In fact, I did do some testing for Ford, automatic clutches for asbestos, but that was phase contrast, so I wouldn't know which fiber type.

I have not heard anything other than chrysotile.

Q. In your work as an industrial hygienist, when you're making measurements to try and attempt to determine the exposure level, is there a level at which you think it is acceptable, under OSHA's guidelines, that somebody could be exposed to an amphibole -- I withdraw that question.

Do OSHA guidelines set out acceptable exposure limits for all types of asbestos between chrysotile and the amphiboles in commercial variety?

A. Wait. What's the question?

Q. I withdraw it.

As an industrial hygienist, and when you are evaluating exposures, you are trying to evaluate if you can have them comply with OSHA standards? Is that primarily what you're doing?

A. I wouldn't call it primarily. Primarily what you are doing is you are evaluating exposures to determine if the people doing the work are at risk of being harmed.

But certainly OSHA compliance is the law of the land. They are not always the same tasks.

Q. What's your primary guiding source, when you are making measurements for clients? Is it to determine whether or not for OSHA compliance, like

the studies we discussed?

A. I would say it is two-fold. I consider it my job to determine if that job is going to put them at an increased risk of becoming ill, and, also, the company must comply with OSHA standards.

Q. Is there OSHA standards that govern the acceptable exposure levels for all types of asbestos?

A. I don't know about all types, but they identify a number of types in the standard.

Q. Do you have set limits that you believe -- because you said OSHA is only a component of it -- that you can point me to that says, okay, for amphiboles, here is the number of low which I think is acceptable to exposure, there won't be disease?

A. Say that again.

Q. You said part of your job is to advocate the law of the land.

A. Yes.

Q. You indicate there is another part of your job, in determining what's acceptable or not acceptable with exposure levels.

Can you tell me what exposure level, to you, is acceptable to amphiboles?

A. I don't know the actual limit where you are going to separate an increased risk from an

essentially safe condition for amphiboles. There is literature out there suggesting that if the dose is below somewhere between one and four fiber years, that does not constitute an increased risk. So you could backtrack that into what would be a safe exposure limit.

For chrysotile, though, we also don't know the exact number, but there, fortunately, we have the epidemiology studies on mechanics which clearly show us that the point one number is completely safe.

And so for the first time, we have epidemiology on low-dose exposure. I'm not aware of the same type of epidemiology for low-dose amphibole-exposure studies.

Q. Do you believe that actually those thresholds are out there and you can point me to literature that defines them?

A. Again, I am not saying point one is the actual threshold. The number actually may be higher. What I am saying is there are epidemiology studies of people, for the first time, who have been exposed to low levels of asbestos.

So it permits us to see that there is not an increased risk of getting disease when your exposure to chrysotile is below point one. It may be possible

that you can be exposed to something above point one and still be safe. I just don't know how much more.

Q. And is the area of material that you think that you are getting that from in what you are calling the epidemiology?

A. Yes, I am getting it from the epidemiology studies.

Q. You are not an epidemiologist?

A. I am not an epidemiologist, but I have familiarity with...

Q. Have you participated in any epidemiology studies you would rely on to give that opinion?

A. I haven't participated in any of the epidemiology studies on asbestos.

Q. Have you participated in any epidemiology study on chrysotile?

A. No.

Q. On tremolite?

A. No.

Q. On crocidolite?

A. No.

Q. Amosite?

A. No.

Q. Talc?

A. No.

Q. Have you ever participated in the process of lung burden analysis or observing what asbestos is or is not present in lung tissue?

A. No, I have done no tissue digestion or analysis.

Q. What about the same for pleural, the pleural areas of pleural surfaces?

A. No, I have not done that either.

Q. Doctor, in your experience in the field of occupational and environmental health, do you believe it is accepted that asbestos causes mesothelioma?

A. Clearly, there is enough information to show that, with sufficient exposure to amphiboles, there is an increased risk of getting mesothelioma.

For chrysotile, I believe there are some epidemiology studies that really don't suggest chrysotile causes mesothelioma, but there are cases of mesothelioma in those cohorts.

If you aren't able to explain those by either tremolite contamination or for some other reason, if you wanted to be conservative and conclude that those few cases were caused by chrysotile, then the conclusion would be that it has some slight potential, but it would take a very high exposure.

Q. When do you believe it became accepted -- do

you believe that asbestos causes mesothelioma?

A. As far as asbestos, there was Wagner studies in the early '60s that were suggesting an association, but just because you have someone coming out with a paper on that -- just like when Selikoff was announcing the increase in lung cancer associated with insulators in the middle '60s, it's not accepted by the occupational health community. So it takes time.

Q. When did you accept it? Or have you accepted it?

A. When have I accepted that asbestos causes cancer?

Q. Mesothelioma.

A. Well, you are talking about all forms of cancer or all forms of asbestos?

Q. Yeah.

A. Well, it was an evolving process of when the occupational health community, and my following of it, concluded without a doubt that it was a known human carcinogen. And I can't pinpoint an exact year.

Certainly by the time I was a practicing industrial hygienist in the early '70s, the suggestion was out there, but there were more studies

that needed to be done and more work that needed to be done.

And as the '70s went on towards the later '70s -- and I can't give you an exact time -- is when I agreed, and others in the occupational health community agreed, that asbestos was a known human carcinogen.

Q. Did you accept that at the time that you were working for Ford? Had you evolved, in that process, to be acceptance at that stage?

A. At that point I think there was a lot of talk and suggestion that it certainly might be, but I don't know if it was absolutely confirmed during that period of time.

Q. So in the time that you were at Ford and the discussions came up, did you offer an opinion?

A. When you say offer an opinion, I am not sure which -- I mean, it's not like executives at Ford came into my office and said, "Tell us about asbestos." I don't understand what you mean.

Q. But you hadn't fully evolved in accepting that premise at that time? Would you please answer my question?

A. I would agree that I had fully accepted it.

Q. Does asbestos cause mesothelioma in what we

call secondary exposure, just in household family members?

A. It is a dose-response relationship. It depends on fiber type. If you satisfy that dose-response relationship, then it can occur.

Q. That was my question. You accept that that's an acceptable -- that's acceptable in the scientific community, that household exposures can result in asbestos-related mesothelioma?

A. I didn't say that. What I said --

Q. If you don't agree with that, let me know.

A. Well, I am trying to answer your question.

Q. Yeah. Sorry, Doctor.

A. What I am saying is that it is a dose response. If you have a sufficient dose, you will increase the risk. So the question is, what is the dose of the secondary exposure, and you have to make that determination.

Q. Okay. Beyond that dose equation, do you believe that it is documented in the literature that household exposures have caused mesothelioma?

A. No.

Q. Okay. So you don't --

A. Because I haven't seen a dose calculation that met the requirement to increase the risk.

Q. So to your satisfaction, you don't believe the mixture is established, to your satisfaction?

A. It hasn't, because if it did, it would suggest that trivial exposures can increase the risk. For chrysotile, we have scientific data to show that that can happen.

Q. Let me just go over your -- I don't think I have asked this. Let me follow up.

By way of any publications you might have published -- I don't have your CV, which is fine -- have you published any books or chapters in books on the subject of asbestos?

A. Chapters in books or books, no.

Q. Have you published any peer-reviewed literature, which could be a peer-reviewed academic publication, on the subject of asbestos?

A. No.

Q. And have you published any paper that you can direct me to that's been published in either a medical or an industrial hygiene journal on the subject of asbestos?

A. That I have written?

Q. Yes.

A. There was a couple of non-peer-review magazines or newsletters in which I have published

something.

Q. Is "a couple" two?

A. Two.

Q. So that's what I'm interested in today. But that's current, and after that is still true today?

A. Yes.

Q. Do you have any that are in the works?

A. No.

Q. I'm going to try to meet my deadline, and if you can give me a minute or two, I'm going to try and just do some things here.

You've addressed Mr. Thompson's exposure in friction products and gaskets, in your report. Let me ask this, and I think you've put it around a 10 or 15-year ballpark.

If he had worked as a mechanic for twice that, let's say twice whatever it is, 10 to 25 years, would it change your opinion as to whether or not he would have had a sufficient dose, as a hypothetical, Doctor; that is, exposure to those products could play any role in causing the disease?

A. No, and the reason for that is that the epidemiology studies on mechanics cover mechanics who have essentially been life-long mechanics.

The fact that he did it for a lesser period of time just makes it a little easier to ensure myself that he fits within that category that's been studied.

Q. So if I put this in for the maximum amount of time, having a mechanic that worked with brakes 50 years in the course of their career, no matter how much they did in a day, you don't think that those could ever raise the level of causing asbestos disease?

A. What I would have to do, if you start getting into a situation that's beyond the normal mechanic, I would have to review the epidemiology studies again and pay a little more attention to the make-up to see if it also included, within the cohorts, people who would be similar to what you would be describing.

Q. Put it this way. Under your current understanding of what a mechanic could or could not have done in their lifetime, be it a 50-year ordinary mechanic, you think the answer is you cannot conceive of a dose that would lead to asbestos disease?

A. If we are talking about a normal mechanic situation, then it is correct, I don't believe that they would be exposed to a dose --

(AN OFF-THE-RECORD DISCUSSION WAS HELD.)

(THE REPORTER READ BACK THE FOLLOWING QUESTION:

"If we are talking about a normal mechanic situation, then it is correct, I don't believe that they would be exposed to a dose --")

THE WITNESS: Of asbestos that could increase their risk of getting disease.

Q. (BY MR. O'BRIEN) And in reaching your opinions in this area of friction products, Doctor, do you rely on Dr. Lemmon's work? Are you familiar with it?

A. I am familiar with it.

Q. Do you rely on it in reaching your opinions or do you think he has contrary opinions to you?

A. I think he has contrary opinions.

Q. Have you reviewed Dr. Susuki's work?

A. I have reviewed some of his work.

Q. Do you find it reliable and do you rely on it in forming your opinions?

A. I would have to look at individual things he said to make a determination of what I might agree with or what I might not agree with.

Q. Isn't his observations and studies on what

types of fibers may migrate to the pleura? Are you familiar with that?

A. Again, I have read some of his work. I would have to look at exactly what he said to comment on it.

Q. Would it be fair to say that you are not relying on his work in forming your opinions?

A. That would be correct.

Q. And if you know, do you think that he may have contrary -- that's okay. I take that back. Strike that question, Doctor.

Have you reviewed product testing by Dr. Longo or Dr. Hatfield in this area, on friction products?

A. Yes.

Q. Do you rely on the work they have done in forming your opinions, or not?

A. I have had the opportunity to visit their facility and -- how they conduct their tests. I have some concerns about how they generate their data. So because of that, there are things that they have concluded that I do disagree with.

Q. Would it be fair to say you don't, therefore, rely on their work in forming your opinions?

A. I looked at it and I reviewed it, but it is true that I didn't agree, basically, with some of their conclusions.

Q. You make a comment in your report that there are fibers that may be greater or less than five microns in length?

A. Yes.

Q. Can you point me to any studies -- any studies in the '80s by Stanton that you would be relying on in forming your opinion that fibers of less than five microns in length you don't view as disease-causing?

A. You mean in addition to Stanton?

Q. Yes.

A. I also reference a study by Growth who was at NIOSH.

Q. When was that? I'm sorry.

A. That was a 1985 article. And also the EPA has just published a draft document, the Berman-Crump model, that suggests that the cutoff for when fibers are toxic shouldn't be five microns. It should actually be 10 microns. That fibers less than 10 microns are not toxic.

Q. The EPA has not adopted that position as of this date, has it?

A. They have put it on their website and published it as a draft standard. And in the beginning it says that the EPA is saying this is for use by people who want to evaluate asbestos health hazards.

Q. It has not been adopted by the EPA today, that you know of, as a position?

A. Again, they are the ones who have made it available and talked about scientists using it to assist them in identifying health hazards associated with asbestos.

Q. When did you see that first?

A. Last summer.

Q. And if I asked you before you saw that report, whether or not you thought fibers of five microns in length could or could not be -- have an injurious effect, what would you have answered me?

A. I would have said that fibers less than five microns do not have an injurious effect because there have been studies to support that.

Q. Has that always been your position?

A. It has always been my position from the time I have seen those studies.

Q. And the studies we're talking about are the 1980 studies, Stanton and Grove?

A. There are those studies. Prior to that time, there had already been statements, that I have been made aware of, that fibers less than five microns are not toxic; however, I don't remember the source of those studies.

Q. Would you agree with me also it was thought that there can be -- there's legitimate literature that they are suggesting fibers shorter than five microns were problematic or injurious?

A. That there were some people who make that claim?

Q. Yes.

A. Yes, I am aware of that.

Q. In your measurements that you personally did, did you measure fiber length?

A. When you say that I personally did --

Q. Yeah.

A. -- I am not sure. All of the thousands --

Q. The studies -- let me bring it down to the studies that you talked -- that you referred to as your studies, the postal service, the one at Ford; did you do a fiber-length analysis?

A. To the extent that anything that's done with phase-contrast microscopy, five is essentially the limit of the microscopic method, and it was also the

OSHA standard.

Q. So when you were counting, you were counting like five -- in excess of five microns and you weren't counting those less than five microns?

A. That's correct.

Q. I think that covers that.

(AN OFF-THE-RECORD DISCUSSION WAS HELD.)

MR. O'BRIEN: I tell you what, Doctor. I told you that it seems to be complete at this time. That's all my questions.

MR. KRAUSE: Do you have any questions?

MS. BROACHE: No.

MR. KRAUSE: Does anyone on the phone have any questions?

MR. BENTIVOGLIO: Andrew?

MR. O'BRIEN: Yes?

MR. BENTIVOGLIO: This is Jim Bentivoglio. Just to clarify, Rob or Ron in your office yesterday had asked for Dr. Rabinovitz's CV, and I had sent that to him.

MR. O'BRIEN: That's okay. We've talked about it. It wasn't here at the deposition, but that is not a -- I don't have a problem about that.

MR. BENTIVOGLIO: Okay. Just wanted to make sure you knew you had it, at least at your office.

MR. O'BRIEN: Appreciate that. Thank you.

MR. KRAUSE: Thank you very much, Doctor.

THE WITNESS: Thank you.

(DEPOSITION ADJOURNED AT 12:28 P.M.)

(WHEREUPON THE SIGNATURE WAS WAIVED AND THE WITNESS EXCUSED.)

CERTIFICATE

I, KEVIN J. WEICHMAN, CSR, CCR, do hereby certify that there came before me at the BWI Airport Marriott, 1743 West Nursery Road, Baltimore, Maryland,

DR. SHELDON H. RABINOVITZ,

who was by me first duly sworn; that the witness was carefully examined, that said examination was reported to myself, translated and proofread using computer-aided transcription, and the above transcript of proceedings is a true and accurate transcript of my notes as taken at the time of the examination of this witness.

I further certify that I am neither attorney nor counsel for nor related nor employed by any of the parties to the action in which this deposition is taken; further, that I am not a relative or employee of any attorney or counsel employed by the parties hereto or financially interested in this action.

Dated this 2nd day of February, 2006.

_____

KEVIN J. WEICHMAN, CSR, CCR