

**In The Matter Of:**

*KENNETH DALE RAPER, et al. v.  
OWENS-CORNING FIBERGLASS CORPORATION, et al.*

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*RICHARD A. LEMEN, Ph.D.*

*March 18, 1999*

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**DEPOSITION**  
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Page 1

[1] IN THE COUNTY COURT  
[2] AT LAW NO. 3  
[3] DALLAS COUNTY, TEXAS  
[4] KENNETH DALE RAPER and )  
[5] MARGARITE ELLEN RAPER, )  
[6] Plaintiffs, )  
[7] vs. )  
[8] ) CAUSE NO. 98-8060-C  
[9] OWENS-CORNING FIBERGLASS )  
[10] CORPORATION, et al., )  
[11] Defendants. )  
[12] DEPOSITION OF  
[13] RICHARD A. LEMEN, Ph.D.  
[14] March 18, 1999  
[15] 9:03 a.m.  
[16] 4000 SunTrust Plaza  
[17] 303 Peachtree Street, N.E.  
[18] Atlanta, Georgia  
[19] Diane Bachus, B-2089  
[20] BROWN REPORTING, INC.  
[21] 1740 PEACHTREE STREET, N.W.  
[22] ATLANTA, GEORGIA 30309  
[23] (404) 876-8979



[1] APPEARANCES OF COUNSEL  
[2] On behalf of the Plaintiff:  
[3] PATRICK HAINES, Esq.  
[4] Baron & Budd  
[5] The Centrum, Suite 1100  
[6] 3102 Oak Lawn Avenue  
[7] Dallas, Texas 75219-4281  
[8] On behalf of the Defendant:  
[9] Allied Signal, as Successor in interest to the  
[10] Bendix Corporation:  
[11] ERIC K. FALK, Esq.  
[12] Davies, McFarland & Carroll, P.C.  
[13] The Tenth Floor, One Gateway Center  
[14] Pittsburgh, Pennsylvania 15222-1416  
[15] On behalf of the Defendant  
[16] Daimler-Chrysler Corporation:  
[17] OLLIE M. HARTON, Esq.  
[18] Hawkins & Parnell  
[19] 4000 SunTrust Plaza  
[20] 303 Peachtree Street, N.E.  
[21] Atlanta, Georgia 30303-3243  
[22] On behalf of the Defendant  
[23] Pittsburgh Corning:  
[24] IVAN A. GUSTAFSON  
[25] Blasingame, Burch, Garrard,  
[26] Bryant & Ashley, P.C.  
[27] 440 College Avenue North  
[28] P.O. Box 832  
[29] Athens, Georgia 30603

Page 3

[1] APPEARANCES OF COUNSEL, CONT.

[2]

On behalf of the Defendant

[3] Kelly Moore:

[4] KEVIN J. BAHR, Esq.

Hawkins & Parnell

[5] 4000 SunTrust Plaza

303 Peachtree Street, N.E.

[6] Atlanta, Georgia 30303-3243

[7]

On behalf of the Defendant

[8] GEORGIA PACIFIC:

[9] JONATHAN W. JOHNSON, Esq.

Nelson, Mullins, Riley & Scarborough, L.L.P.

[10] First Union Plaza, Suite 1400

999 Peachtree Street, N.E.

[11] Atlanta, Georgia 30309

[12] On behalf of the Defendant

NARCO:

[13]

C. DENNIS BARROW, JR.

[14] Vinson & Elkins, L.L.P.

2300 First City Tower, 1001 Fannin

[15] Houston, Texas 77002-6760

[16]

On behalf of the Defendant

[17] Pneumo Abex Corporation:

[18] FRANCESCA M. SIENI, Esq.

Smith, Abbot, L.L.P.

[9] 100 Maiden Lane

New York, New York 10038

[10]

[11]

[12]

[13]

[14]

[15]

Page 4

[1] APPEARANCES OF COUNSEL, CONT.

[2]

On behalf of the Defendant

[3] Armstrong World Industries, Inc.; Asbestos

Claims Management Corporation, f/k/a National

[4] Gypsum Company; U.S. Gypsum Company; GAF

Corporation; Dana Corporation; Quigley

[5] Company, Inc.; Flexitallic, Inc.;

the Synkoloid Company;

[6]

GARY ELLISTON, Esq.

[7] DeHay & Elliston, L.L.P.

NationsBank Plaza, Suite 3500

[8] 901 Main Street

Dallas, Texas 75202

[9]

[10]

[11]

[12]

[13]

[14]

[15]

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Page 5

[1] (Defendant's Exhibit 1 was marked for

[2] identification.)

[3] RICHARD A. LEMEN, Ph.D.,

[4] having been first duly sworn, was examined and

[5] testified as follows:

[6]

**CROSS-EXAMINATION**

[7]

**BY MR. HARTON:**

[8]

**Q:** Dr. Lemen, I'm Ollie Harton. I'm going

[9]

to ask you some questions today. But before we get

[10]

farther, I want to say a few things.

[11]

**MR. HARTON:** This is a deposition

[12]

being taken pursuant to agreement of

[13]

counsel. All objections except as to the

[14]

form of the question and responsiveness of

[15]

the answer will be reserved until the time

[16]

of trial. This deposition is being taken

[17]

pursuant to the Texas Rules of Civil

[18]

Procedure and can be used for all purposes

[19]

permitted thereunder.

[20]

Dr. Lemen, I don't know what you want

[21]

to do about reading and signing, but the

[22]

trial starts sometime next week.

[23]

**MR. HAINES:** I guess we'll go ahead

[24]

and waive signature.

[25]

**MR. HARTON:** If that's all right,

Page 6

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[1] waive signature. If you want to read it,  
[2] it's going to make things difficult.  
[3] Potentially you may testify at trial. But  
[4] if you want to waive —

[5] **MR. HAINES:** Given the time frame, it  
[6] will be better to waive.

[7] **Q:** (By Mr. Harton) What I'd like to do,  
[8] first of all, is show you what is one of the  
[9] amended notices of deposition, which is Exhibit 1.  
[10] and ask you if you've seen that before, sir.

[11] **A:** No.

[12] **Q:** If we could, let me run through what I  
[13] call the attachments at the back. And I know  
[14] you've brought a number of documents with you, and  
[15] we'll see what they are.

[16] But you brought, first of all, I think, a  
[17] CV. You have one. Is this a — obviously, this  
[18] is a CV of yours. Do you know when this — oh,  
[19] it's December '98? Is that the right vintage?

[20] **A:** Right.

[21] **Q:** This is newer than the ones I've got.

[22] **A:** Probably.

[23] **Q:** What additions do you have on this that  
[24] weren't on the earlier one?

[25] **A:** Possibly some publications and — very

[1] information on Mr. Raper?

[2] **A:** I'll give you everything that I've been  
[3] provided on Mr. Raper is in this packet right here.  
[4] And there is — there are two things on the  
[5] medical.

[6] **Q:** Okay. If it's all right, collectively  
[7] we'll mark this as Exhibit 3.

[8] **A:** Yes.

[9] (Defendant's Exhibit 3 was marked for  
[10] identification.)

[11] **Q:** (By Mr. Harton) It's a cover letter to  
[12] you, obviously. So everyone knows, the report by  
[13] Dr. Robb — well, actually, two, one dated  
[14] 11/24/98, another 2/18/98. What I will call the  
[15] work history sheets that Baron & Budd prepares on a  
[16] regular basis for their clients. And this is just  
[17] job sites, products information. And Volume —

[18] **A:** The rest are all Mr. Raper's two  
[19] depositions and co-worker depositions.

[20] **Q:** Those are I and II of Raper. Co-worker  
[21] depositions of Mr. Ivie, Washington and Bridges and  
[22] Lewis.

[23] Have you been provided any other  
[24] information on Mr. Raper?

[25] **A:** No, that's it.

Page 7

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[1] few additions. It's just that when my computer  
[2] prints it out, it prints out a new date on it. So  
[3] it doesn't necessarily mean that it's changed, but  
[4] I think that I probably added a chairperson of  
[5] Science & Technology Advisory Committee and the  
[6] Carpenters Health & Safety Fund, and I think I may  
[7] have added a couple of publications.

[8] I think — I don't know which version you  
[9] have.

[10] **Q:** Mine's August.

[11] **A:** But I think probably the last three or  
[12] four publications. But that's the most current one  
[13] I have.

[14] **Q:** All right. Can we mark this, take this  
[15] as an exhibit?

[16] **A:** Yes, you can have that.

[17] **Q:** Might as well mark that while we're at it  
[18] and we can look through there.

[19] **A:** Is there anybody by phone?

[20] **Q:** No, not that I'm aware of.

[21] (Defendant's Exhibit 2 was marked for  
[22] identification.)

[23] **Q:** (By Mr. Harton) Second, the entire  
[24] medical file on Kenneth Dale Raper.

[25] Have you been provided any medical

[1] **Q:** No other medical records?

[2] **A:** No, sir.

[3] **Q:** No chest X-rays?

[4] **A:** No.

[5] **Q:** Do you have — some people do, some  
[6] people don't. We've requested — if you have a  
[7] list of the cases where you've testified in since  
[8] 1989, do you have any summary of —

[9] **A:** I didn't bring anything, no, sir.

[10] **Q:** Do you have anything like that that would  
[11] just simply indicate that either the deposition —

[12] **A:** I have put together a complete list.

[13] **Q:** How about this way. Last time I know I  
[14] talked — I think it was in August of last year, I  
[15] think. Where have you testified in trial since  
[16] August of 1998?

[17] **A:** Well, last year, calendar year, I didn't  
[18] look it up, I've testified five times in trial.  
[19] And I've given, I think, 16 depositions in the last  
[20] year. Most of the trials were — that I testified  
[21] in were fact witness as well as state-of-the-art,  
[22] principally dealing — a lot of them dealing with  
[23] Pittsburgh Corning. And this year I've testified  
[24] probably in about six trials since January, or  
[25] somewhere in that neighborhood, both as a

Page 10

[1] state-of-the-art and fact witness. The latest  
[2] trial that I testified in was the paper mill trial  
[3] in Louisiana as a rebuttal witness, not as a — I  
[4] was brought in as rebuttal for that trial.  
[5] And, also, last week I testified in a  
[6] Pittsburgh Corning trial in Austin, Texas. And do  
[7] you want me to keep going?  
[8] Q: No. Let me ask you some questions that  
[9] might help narrow at least my focus. For the years  
[10] '98 and '99, have you testified in a case where you  
[11] were asked opinions regarding brakes or brake  
[12] linings?  
[13] A: The paper mill case.  
[14] Q: Other than the paper mill case, is that  
[15] the only trial in '98, '99?  
[16] A: I think that's the only trial that I  
[17] testified in that dealt with brakes.  
[18] MR. HAINES: Just to be clear, it was  
[19] not brakes specifically but the Borg-Warner  
[20] case, which was the clutch facing case. It  
[21] was technically not a brake case but pretty  
[22] close. And that was in early '98.  
[23] Q: (By Mr. Harton) Okay. Other depositions  
[24] that you've given in brake lining cases in '98 or  
[25] '99?

Page 11

[1] A: I think those pretty much cover it, to  
[2] the best of my knowledge.  
[3] Q: Did you give both depositions and trial  
[4] testimony —  
[5] A: Yes.  
[6] Q: — in both —  
[7] A: Yes.  
[8] Q: — of the Borg-Warner case and in the  
[9] Boglusa case?  
[10] MR. HAINES: I don't think you were  
[11] deposed in Borg-Warner.  
[12] THE WITNESS: I don't think I was  
[13] either, but I spent about six days in this  
[14] room in the paper mill, as you remember.  
[15] Q: (By Mr. Harton) Luckily, I don't.  
[16] A: You popped your head in a few times, I  
[17] think.  
[18] Q: Do you have any — going down the list of  
[19] things to produce, any charts, exhibits or  
[20] photographs that you've considered in connection  
[21] with this case? That would be No. 7.  
[22] A: Well, usually when I testify I bring  
[23] along this book that I've used in most every case  
[24] for state-of-the-art, which is — does have  
[25] exhibits in it. It has my time line. I brought an

Page 12

[1] extra copy of the time line, which is the principal  
[2] thing that I rely upon in state-of-the-art. But  
[3] you can have those copies.  
[4] MR. HARTON: Let me go off the record  
[5] for a minute.  
[6] (Discussion off the record.)  
[7] Q: (By Mr. Harton) What I'm going to mark  
[8] as the next exhibit, as opposed to your large  
[9] notebook that you bring — and I understand that  
[10] should we want a copy of the entire notebook you  
[11] can make that for us?  
[12] A: Yes.  
[13] Q: But as the next exhibit or as a portion  
[14] of it I'm just going to put your time line in, if  
[15] that's all right.  
[16] A: And that you can keep.  
[17] Q: No. 8, any other objects or evidence that  
[18] you consider —  
[19] A: I pulled out of my files specific  
[20] references dealing with brakes, and that is not  
[21] included in this notebook.  
[22] Q: Okay.  
[23] A: There's a MedLine search in there,  
[24] there's a NIOSH search and a selected number of  
[25] articles that I pulled.

Page 13

[1] Q: Are these articles included in your time  
[2] line, do you know?  
[3] A: Some are and some aren't.  
[4] Q: We should mark this and get copies of  
[5] that.  
[6] A: Okay. If I could, I'd like to make the  
[7] copies of that. I mean, I can do that real  
[8] quickly, but I can have them to you tomorrow,  
[9] probably. But you can mark it. I mean —  
[10] Q: That's fine. Other than these articles  
[11] and what you've produced as your — in response to  
[12] No. 7, your large notebook, I will call it, that  
[13] you're bringing with you to trial, is there any  
[14] other information that you have considered in  
[15] connection with this case, the Raper case?  
[16] A: No.  
[17] Q: No. 9 is asking for standards,  
[18] regulations, books, treatises or other supporting  
[19] written or computerized data that you've relied  
[20] upon in connection with the testimony that you're  
[21] going to give in this case.  
[22] MR. HAINES: Let me just interpose an  
[23] objection as to the breadth of that  
[24] request. Obviously, Dr. Lemen has lots of  
[25] learning treatises, which he can tell you

Page 14

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[1] about. If you don't have a copy, I'm sure  
[2] we can find a copy if he has one. But I do  
[3] object to the overbreadth of the request.  
[4] **THE WITNESS:** I would say my  
[5] knowledge on asbestos comes from a lot more  
[6] material than what I've produced here  
[7] today. And so to answer that question I  
[8] would say there are many books I've read  
[9] and other things. But to bring those would  
[10] necessitate bringing my entire library,  
[11] so —  
[12] **Q:** (By Mr. Harton) No. 10, all notes,  
[13] documents, records, photographs, letters or other  
[14] written material of any kind that's been provided  
[15] to you by anyone with regard to this case. Is  
[16] there anything else?  
[17] **A:** No.  
[18] **Q:** Billing records.  
[19] **A:** I haven't made any billings on this case  
[20] to this point in time.  
[21] **Q:** How much time have you spent on this case  
[22] so far?  
[23] **A:** Well, I've read through the materials  
[24] that I was given. I would say that I've possibly  
[25] spent six hours at maximum, something like that.

Page 15

Page

[1] **MR. HARTON:** Let me get this marked.  
[2] if I can, and then give it back to you.  
[3] Can you mark that?  
[4] (Defendant's Exhibits 4 and 5 marked  
[5] for identification.)  
[6] **Q:** (By Mr. Harton) What we've marked as  
[7] Exhibit 9 — or 4, I'm sorry, these are the  
[8] articles. Is this something you prepared for the  
[9] Raper case or was this prepared in connection with  
[10] other litigation?  
[11] **A:** I pulled the material out of this —  
[12] that's in that notebook for the Raper case. And I  
[13] actually had prepared the literature searches  
[14] earlier for another case. So you'll see the date  
[15] on those are several months old. But I put the  
[16] notebook together specifically for this case.  
[17] **Q:** What are your charges for your time?  
[18] **A:** I charge for a deposition minimum daily  
[19] fee of \$1,500, and then if it goes over — that's  
[20] based on \$300 an hour, and 250 for preparation  
[21] time.  
[22] **Q:** Have you — No. 12, the last one, this is  
[23] dealing with presentations, videotapes, recordings  
[24] or writings you may have made in connection with  
[25] seminars, speeches or presentations given to

[1] lawyers or groups of lawyers.  
[2] Do you have anything that's responsive to  
[3] No. 12?  
[4] **A:** No.  
[5] **Q:** That being done, let's talk about —  
[6] first of all, I represent Chrysler Corporation.  
[7] Have you been provided any documents with respect  
[8] to Chrysler Corporation?  
[9] **A:** No.  
[10] **Q:** Have you ever been to a Chrysler  
[11] Corporation facility where they're making cars?  
[12] **A:** During the time I worked for NIOSH, I had  
[13] worked on several occasions with the Joint Labor  
[14] Management Committees of the auto workers from the  
[15] three major car companies. And in the process of  
[16] that I've been into a Chrysler plant, but it's been  
[17] 15, 20 years ago at least. And I don't — I think  
[18] it was a Chrysler plant, but it was in Detroit.  
[19] **Q:** An automobile plant?  
[20] **A:** Yeah, right.  
[21] **Q:** The time you went into this automobile  
[22] plant, were you at all focused on air sampling for  
[23] asbestos?  
[24] **A:** Mainly it was an orientation that we took  
[25] as a part of the tour of the plant. And it wasn't

[1] really as a compliance activity or anything. The  
[2] only time that I've ever been in an auto plant that  
[3] really had anything to do with a health hazard  
[4] evaluation was when I was working on the models,  
[5] model makers, and there was some concern of the  
[6] models for the cars and disease that was occurring  
[7] among the model makers. And that was back in the  
[8] late '70s.  
[9] **Q:** What was the disease they were worried  
[10] about with these model plants?  
[11] **A:** I'm trying to remember right now. It  
[12] was — I think it was a concern about solvent  
[13] exposure.  
[14] **Q:** It wasn't asbestos or asbestos exposure?  
[15] **A:** No.  
[16] **Q:** Have you been given any — what I call  
[17] test results on tests of brake linings that would  
[18] attempt to quantify the amount of asbestos that may  
[19] be released by either installing or using brake  
[20] liners?  
[21] **A:** If you look at the notebook that he has,  
[22] Exhibit 4, the Lorimer paper — I think it may be  
[23] the number one or two paper in there, and the Rohl,  
[24] R-O-H-L — is that how you pronounce it? Rohl.  
[25] And they do give some figures. And then there are

Page 18

[1] others in there that do talk about amount of fibers  
[2] released during the repair. But that's the  
[3] information. It's nothing that I've collected,  
[4] it's material that I've relied upon.

[5] Q: The information that you have been given  
[6] would have been, then, in effect, published  
[7] peer-reviewed reports?

[8] A: Yes.

[9] MR. HAINES: I'm not sure he  
[10] testified that was given to him. I think  
[11] that was —

[12] THE WITNESS: No, I pulled this. No  
[13] one gave that to me. I pulled that myself.

[14] Q: (By Mr. Harton) Let me change the  
[15] question. The information that you've — I'll  
[16] start over. The information that you have  
[17] quantifying the amount of asbestos released by  
[18] working with or installing brake linings has come  
[19] from the published peer review literature?

[20] A: And also NIOSH reports, which are like  
[21] the CIB that you're looking at right now, which is  
[22] not a published peer review but a NIOSH document  
[23] that —

[24] Q: Let me run through these. One of the  
[25] articles in here is the Current Intelligence

Page 19

[1] Bulletin 5 of August 1975?

[2] A: Yes, sir.

[3] Q: It would have some attempt to quantify  
[4] the amount of asbestos fibers released by or around  
[5] garage mechanics.

[6] This CIB No. 5, August 1975, deals with  
[7] tests that were done on brake drums, dust from  
[8] brake drums. Is that right?

[9] A: That's correct.

[10] Q: The Rohl article I think you referred to  
[11] is asbestos exposure during brake lining  
[12] maintenance and repair?

[13] A: Yes.

[14] Q: That's a 1976 article?

[15] A: Right.

[16] Q: The Lorimer-Rohl article, I think also a  
[17] 1976 article, —

[18] A: Yes, that's correct. I think from there  
[19] on back there are literature reviews.

[20] Q: So all of the peer-reviewed literature  
[21] that you could find quantifying the amount of  
[22] asbestos released by working with brake — or I  
[23] should say friction products is all after 1965,  
[24] right?

A: I believe that's correct.

Page 20

[1] Q: Have you been given any unpublished,  
[2] un-peer-reviewed literature attempting to quantify  
[3] the amount of asbestos fibers released by using  
[4] brake linings?

[5] A: No, none other than what I've brought  
[6] with me.

[7] Q: I'm talking about being given as opposed  
[8] to what you found. That question I did mean to  
[9] say —

[10] A: No, sir.

[11] Q: All right. You've — I'm not sure which  
[12] exhibit this is.

[13] What is — Exhibit 5 includes the various  
[14] depositions of Mr. Raper, his co-workers and  
[15] others?

[16] A: Exhibit 5 includes everything that I was  
[17] given by plaintiff's attorneys, two medical reports  
[18] by Dr. Robb, the rest are depositions of — two of  
[19] Mr. Raper, and then the rest are co-worker  
[20] depositions.

[21] Q: Based upon all the information you've  
[22] received in the Raper case, do you have any  
[23] information to — that would support an opinion  
[24] that you may express at trial that Mr. Raper worked  
[25] with automobile brake linings after 1965?

Page 21

[1] A: I don't believe I have anything — I'm  
[2] really not being asked to talk about his exposure,  
[3] but I don't think I have anything.

[4] MR. HAINES: Right. No, Dr. Lemen is  
[5] not being presented for that particular  
[6] opinion.

[7] Q: (By Mr. Harton) So from what you have  
[8] done, your review of all of the depositions,  
[9] Mr. Raper's deposition and his co-workers'  
[10] depositions, focusing on those only, you have no  
[11] information to say that he worked with automobile  
[12] brake linings after 1965, right?

[13] A: No.

[14] Q: Okay. Let's talk about — let's talk  
[15] about levels of exposure. Based on what you've  
[16] seen in Exhibit 5, you would agree that Mr. — or  
[17] is it your opinion that Mr. Raper was diagnosed  
[18] with mesothelioma?

[19] A: That's correct.

[20] Q: Have you done anything to attempt to  
[21] independently verify in any way this diagnosis, or  
[22] are you just using these reports as the basis for  
[23] your opinion?

[24] A: I'm relying upon these reports. First of  
[25] all, I'm not a medical doctor, so I'm not being

Page 26

Page 28

[1] here. And my opinion is yes, chrysotile can cause  
[2] asbestos-related disease.

[3] Q: And by chrysotile, I'm attempting to  
[4] refer to pure chrysotile without any contaminant of  
[5] any type.

[6] A: Very rarely do we find pure chrysotile,  
[7] because most chrysotile is contaminated with  
[8] amphiboles such as tremolite. And there have been  
[9] very few, if any, studies that I know of that have  
[10] looked at pure chrysotile, because they haven't  
[11] been really able to identify pure chrysotile.

[12] Q: Do you know anything about the processing  
[13] that's done with chrysotile ore, once it's taken  
[14] from the mine, before it can be used in other  
[15] products? Have you studied that?

[16] A: What do you mean by processing? I'm not  
[17] sure I understand the question.

[18] Q: My understanding is, is that they take  
[19] chrysotile ore and dig it out, for instance, like  
[20] you would coal, strip mining?

[21] A: Well most of the — with few exceptions,  
[22] most of the mines for asbestos in the world are  
[23] strip-type mines. And there are some underground  
[24] mines, but those are very few and not really used  
[25] for commercial purposes anymore, to my knowledge.

Page 27

[1] Q: After the ore is taken out, they have to  
[2] process it before they can get it to the point that  
[3] it can be used or incorporated into any products?

[4] A: They take it into a mill, where they  
[5] grind the ore away from the fibers and separate the  
[6] fibers, trying to get all of the non-asbestos ore  
[7] out of the material, and then it is shipped for  
[8] process manufacturing.

[9] Q: Do you know anything about the various  
[10] grades of chrysotile ore that have been used in  
[11] different —

[12] A: There are different grades. I'm not  
[13] really an expert on the different grades. I know  
[14] they are listed in the company, but I haven't  
[15] really compared one grade to another grade.

[16] Q: Have you ever seen any studies that  
[17] indicate that, based upon a test of a brake lining,  
[18] anyone has ever found tremolite in a brake lining?

[19] A: I don't know.

[20] Q: Have you ever seen any tests or studies  
[21] on dust from brake linings that indicate anyone  
[22] ever found tremolite in the dust from a brake  
[23] lining?

[24] A: I don't know. I have not seen any lists,  
[25] put it that way.

[1] Q: Obviously, there are those who believe  
[2] that chrysotile, to cause mesothelioma, either  
[3] there must be intense, enormous concentrations or  
[4] it can't cause it at all. You're aware of that?

[5] A: I am aware of the scientific debate.

[6] Q: So you would agree that there's a debate  
[7] in the scientific community about that?

[8] A: Yes, I believe that chrysotile can cause  
[9] mesothelioma. That's correct.

[10] Q: Thank you.

[11] MR. HAINES: Better cut back on your  
[12] coffee.

[13] Q: (By Mr. Harton) You know where I'm going  
[14] and I appreciate the help, but you know how records  
[15] are. So excuse me.

[16] Now, brake linings, let's talk about  
[17] brake linings and regulations, I guess, for a  
[18] minute.

[19] Today, 1999, brake linings can be  
[20] manufactured and used with asbestos in them in the  
[21] United States, right?

[22] A: That's correct.

[23] Q: There is no regulation that has ever  
[24] prohibited brake linings from containing asbestos?

[25] A: Well, I don't know how you would classify

Page 29

[1] this, but when EPA tried to ban the use of asbestos  
[2] and then it was overturned by the 5th Circuit, I  
[3] don't know if — there was an attempt to do it, but  
[4] it was not upheld in the courts.

[5] Q: But at least the regulations that have  
[6] been enforced by our government have never banned  
[7] the use of asbestos in brake linings, right?

[8] A: With that one exception. And I don't  
[9] think it banned the use, but it did try to ban the  
[10] use of asbestos in general. I don't think it was  
[11] specific for brake linings.

[12] Q: But the — I just want to make a  
[13] distinction so you understand. I'm talking about  
[14] regulations that were enforced as opposed to  
[15] proposed legislation that was not enacted.

[16] A: I agree.

[17] Q: With regulations that have been enforced  
[18] by our government, they have never banned the use  
[19] of asbestos in brake linings?

[20] A: To the best of my knowledge, that's  
[21] correct.

[22] Q: Other than — there was one study in  
[23] Exhibit 4 — let me get to it — CIB bulletin,  
[24] August 1975.

[25] A: Yes, sir.

Page 22

Page

[1] brought in to verify a diagnosis or to substantiate  
[2] that. I'm making the presumption that the  
[3] diagnosis is correct.

[4] Q: You would agree that as a Ph.D.  
[5] epidemiologist, that asbestos-related diseases are  
[6] dose-related?

[7] A: Yes. I do.

[8] Q: And, for instance, mesothelioma, there  
[9] has to be some dose before the disease could be  
[10] related to asbestos exposure?

[11] A: Yes, there does.

[12] Q: You would agree that in the ambient air  
[13] in urban environments, be it Atlanta, Dallas or, I  
[14] think, any city in this country, there would be  
[15] some asbestos in the air?

[16] A: There's generally a background level of  
[17] asbestos, depending upon the urbanization of the  
[18] city. And probably in Atlanta it's getting a lot  
[19] bigger.

[20] Q: Yes, it's getting larger in Atlanta as  
[21] the city grows.

[22] Gosh, lose my train of thought.  
[23] Do you know of any attempt to quantify or  
[24] prove that ambient air concentrations of asbestos  
[25] can cause any asbestos-related disease?

Page 23

Page

[1] A: Well, there have been community studies  
[2] that have been done concerning asbestos and  
[3] disease. Been studies around the Canadian asbestos  
[4] mines and mills. The latest, I guess, is a paper  
[5] that was in New England Journal of Medicine,  
[6] looking at cancer rates in proximity. The original  
[7] paper that Chris Wagner did about mesothelioma in  
[8] South Africa actually looked at community  
[9] exposures. So there have been some studies that  
[10] did that. Newhouse in England looked at some  
[11] community studies done around asbestos factors.

[12] Q: Poor questions. I'm trying to exclude —

[13] A: Those type of things?

[14] Q: Yes. And, really, so you know, I know  
[15] those things are out there. I don't deny that.  
[16] But, for instance, for someone who would live in —  
[17] be it Atlanta or Dallas or in some city where  
[18] they're not next to a factory, they're not next to  
[19] a mine where asbestos ore is being taken out of the  
[20] earth, do you know of any studies in urban  
[21] environments, let's say, without those other  
[22] potential contaminants, that have attempted to  
[23] prove that ambient air concentrations can cause  
[24] asbestos-related diseases?

[25] A: I don't know of any that have been

[1] attempted to prove it. The National Cancer  
[2] Institute, about 20 years ago, did put out their  
[3] cancer maps, if you recall those, and they  
[4] published those. Those were not an attempt at  
[5] causation but were an attempt to show where there  
[6] were high rates of lung cancer versus low rates of  
[7] lung cancer based upon geographic location. But  
[8] they weren't an attempt to show causal association.  
[9] they were just an attempt to map it out. So I  
[10] don't — I think the answer to your question is no.

[11] Q: All right. Well, I'll take no and strike  
[12] everything else, then. Move to strike everything  
[13] else. No, that's all right.

[14] Now, obviously — or do you have  
[15] opinions — obviously, I represent a brake  
[16] manufacturer — excuse me. I represent Chrysler  
[17] Corporation. Excuse me. Let me get this straight.  
[18] We may have brakes on our cars because we want them  
[19] to stop.

[20] Do you have any information about the  
[21] types of asbestos that would have been used in the  
[22] brake linings we would have manufactured or used?

[23] A: I don't know specifically for Chrysler.  
[24] but I do know that in my career I was involved  
[25] quite heavily in doing studies of a major brake

[1] manufacturing facility, that being Raybestos  
[2] Manhattan. And, principally, the type of asbestos  
[3] used in that manufacturing facility — whether or  
[4] not cites later used that I don't know — was  
[5] chrysotile asbestos. But there were some mixed  
[6] exposures.

[7] Q: And the mixed exposures you're referring  
[8] to would have been at the Raybestos Manhattan  
[9] plant?

[10] A: In manufacturing of the material, yes.

[11] Q: And so you don't have any information  
[12] that Chrysler would have used any brakes that had  
[13] anything other than chrysotile in it; is that  
[14] right?

[15] A: I do not have any other type of  
[16] information. I don't know what type of brakes. I  
[17] don't even know where Chrysler bought the brakes.

[18] Q: Now, there are obviously different types  
[19] of asbestos, both amphiboles and serpentine and  
[20] chrysotile asbestos. In your opinion, can  
[21] chrysotile asbestos cause mesothelioma?

[22] A: I've published in this American Journal  
[23] of Health, British Occupational Hygiene Journal in  
[24] '97. Those are included in my time line. They're  
[25] also included in papers that are in the notebook

Page 30

Pat

[1] Q: Do you have any other government — I  
[2] guess I'll call them studies of dust that would be  
[3] in brake drums?

[4] A: I didn't include everything, but there  
[5] are a number of health hazard evaluations that  
[6] NIOSH has done that have been in response to  
[7] looking at asbestos exposure in brakes.

[8] As a matter of fact, NIOSH did a very  
[9] large study looking at prevention of — and  
[10] prevention and suppression of dust. And I think,  
[11] as he was just pointing out, there's the EPA  
[12] guidelines that are included in that also.

[13] But I did not try and put together a  
[14] complete list of all the health hazard evaluations.  
[15] There are many of those, and they don't really add  
[16] to — I mean, there are some in there, but it's not  
[17] comprehensive.

[18] Q: So you'll know, I may — I'm going to ask  
[19] some questions now. I'll look through some of  
[20] this. I may have some more after I look through  
[21] that as opposed to me trying to guess what you're  
[22] doing. But let me look through this. It will make  
[23] things a lot easier and a lot less confusing.

[24] You would agree that in 1999 there is a  
[25] permissible exposure limit to asbestos that's

[1] Q: But after abatement contractors go into a  
[2] school, they have to test the air to make sure that  
[3] the quantity of asbestos is below some number  
[4] before they can send the kids back?

[5] A: I can tell you in answer to that that the  
[6] .01 was a recommendation that NIOSH made for  
[7] abatement. I don't know if EPA adopted that, but  
[8] that was one that we made based upon background  
[9] level of asbestos and the ability of the microscope  
[10] to measure down to that concentration.

[11] Q: And this recommendation you said that  
[12] NIOSH made, would that have been back mid 80's, I  
[13] think, or do you remember?

[14] A: It was around the mid '80s. I can't give  
[15] you an exact date.

[16] Q: I know we didn't go through it. It's on  
[17] your CV. What was your position until the mid  
[18] '80s at NIOSH?

[19] A: I was director of the Division of  
[20] Standards Development and Technology Transfer,  
[21] which was the division that formulated the policy  
[22] recommendations of the institute. And that was one  
[23] of them.

[24] Q: The United States, in making their PELs,  
[25] or OSHA, I should say, making its PEL, they have

Page 31

Pag

[1] permitted in this country; is that right?

[2] A: Yes, sir.

[3] Q: That is .1 fiber per cc. on a time  
[4] weighted average, is that right?

[5] A: Yes, sir.

[6] Q: The OSHA PEL is done by a PCM count,  
[7] right?

[8] A: Phase contrast microscopy.

[9] MR. HAINES: If you just left it as  
[10] PCM it would be easier.

[11] THE WITNESS: I just want to make  
[12] sure that what you meant by PCM was the  
[13] same thing I meant by PCM.

[14] MR. FALK: If you'd been here  
[15] yesterday you would have known about that.

[16] Q: (By Mr. Harton) You're aware that there  
[17] are even regulations dealing with the ambient —  
[18] excuse me, let me start over.

[19] You're aware that the EPA has created  
[20] regulations governing post-abatement air in  
[21] schools that they define as clean air, right?

[22] A: Yes, sir.

[23] Q: And that is .01 fiber per cc., right?

[24] A: I can't tell you exactly off the top of  
[25] my head.

[1] not made a distinction between amphibole asbestos  
[2] and serpentine; right?

[3] A: That's correct.

[4] Q: But you are aware that there are other  
[5] governments, Britain, Canada for instance, that  
[6] make a distinction between the two types of fibers  
[7] in coming up with a PEL?

[8] A: I think now the U.K. and Britain have  
[9] banned all uses of asbestos. They used to make a  
[10] distinction, but I don't think that they do now. I  
[11] think that they just promulgated new regulations  
[12] that are about 11 countries that have now  
[13] officially banned the use of all forms — new —  
[14] how do I want to say it — importation or use of  
[15] asbestos in the future. But, yes, I agree with  
[16] you, there are countries that distinguish between  
[17] the various types of asbestos.

[18] Q: Now, Mr. Raper, do you know when —  
[19] assume — do you believe that he stopped using car  
[20] brakes or working with them in 1965, based on your  
[21] review of this information?

[22] A: I don't know the exact date, but  
[23] somewhere in that neighborhood, yes.

[24] Q: Do you know of any articles that would be  
[25] published either — including your time line,

Page 34

[1] No. 3 —

[2] A: Can I look at the time line for just a  
[3] second?

[4] Q: Okay, that's fine. — that would attempt  
[5] to study epidemiologically end users of brake  
[6] linings before 1965?

[7] A: There were case reports prior to 1965.  
[8] Epidemiologic studies, I think the answer is no.

[9] Q: So prior to 1965 there were no  
[10] epidemiological studies of the end users of brake  
[11] linings, indicating that they had an increased risk  
[12] of getting any asbestos-related disease?

[13] A: There were case reports, but the  
[14] epidemiologic studies, I think the answer is no.

[15] Q: Okay. I went through and looked at some  
[16] of your old time lines and tried to pull some of  
[17] the articles. And can you tell me which ones they  
[18] are? Could you just take a minute? We can  
[19] either — I'd just like to talk about those for a  
[20] minute.

[21] A: You mean case reports.

[22] Q: The case reports you're talking about.

[23] A: Let me get over here to the right page.  
[24] The first one I think that I mentioned  
[25] was the Fulton Report of 1935.

Page 35

[1] Q: I'm going to stop you for just a minute  
[2] because I've got that one.

[3] MR. FALK: Fulton, did you say?

[4] MR. HARTON: Fulton.

[5] THE WITNESS: Fulton, 1935.

[6] MR. FALK: That's the Commonwealth of  
[7] Pennsylvania?

[8] MR. HARTON: Yeah.

[9] THE WITNESS: I would just guess  
[10] that.

[11] Q: (By Mr. Harton) The Fulton study, would  
[12] you agree with me that this was — if you look at  
[13] page — I've got a copy of it here. Is this the  
[14] Fulton — it's not a good copy, but let me just  
[15] show it to you. This is a copy.

[16] A: Yes, that's it.

[17] Q: It's a poor-quality reproduction. I'm  
[18] sorry.

[19] A: Right.

[20] Q: In attempting to read — I've put a  
[1] little red mark there. Let me just quote this  
[2] incident, see if you can agree with what I said.  
[3] It says — this article says, quote, The industry  
[4] in this state consists mainly of several  
[5] fabricating plants engaged in the making of

Page 36

[1] asbestos cloth, brake lining, insulating tape,  
[2] asbestos rope and wick and other miscellaneous  
[3] products.

[4] Right?

[5] A: That's correct.

[6] Q: So the Fulton article really deals with  
[7] what I will call the manufacturing of brake linings  
[8] as opposed to end users, right?

[9] A: That's correct.

[10] Q: If you will go to the next article.

[11] A: 1935, another article by — in Great  
[12] Britain.

[13] Q: Is that the HMSO?

[14] A: Yeah, that's Her Majesty's Stationary  
[15] Office. Basically, the equivalent report that  
[16] would come out, like OSHA or Public Health Service.  
[17] They talk in that report about the sawing, grinding  
[18] and turning of brakes.

[19] Q: Do you agree with me that this —  
[20] principally, the HMSO study — I've got a copy if  
[21] you want to look at it, again, it's a bad  
[22] quality — principally dealt with the manufacturing  
[23] of products in the industry as opposed to end  
[24] users.

[25] MR. HAINES: Object, vague as to

Page 37

[1] "principally."

[2] THE WITNESS: Well, I think  
[3] technically your answer is correct, but it  
[4] applies to the end user, because they're  
[5] talking about grinding and turning of the  
[6] brakes. And that's how I would interpret  
[7] it.

[8] Q: (By Mr. Harton) Would you go to the next  
[9] article please, sir.

[10] A: 1939, the George and Leonard. Do you  
[11] have that one? This is in brake manufacturing  
[12] workers.

[13] Q: Yeah. This is brake manufacturing  
[14] workers, right?

[15] A: Right.

[16] Q: Go to the next one.

[17] A: 1940, article by Stone. Do you have that  
[18] one? To answer your question, brake lining  
[19] manufacturing workers.

[20] Q: All right. Next?

[21] A: 1941, the Brachmann paper. Do you have  
[22] that one?

[23] Q: No, I do not.

[24] A: The risk of asbestosis among brake  
[25] grinders and drillers. That was published in —

Page 38

Page

[1] I've got these articles, I just didn't —  
[2] Q: Could you get that one? Because that's  
[3] one that — one way or another somehow it just  
[4] didn't —

[5] MR. HAINES: Do you have it here with  
[6] you?

[7] THE WITNESS: No.

[8] Q: (By Mr. Harton) Just get us a copy for  
[9] it. I've got a search out for it, but we haven't  
[10] been able to locate it yet.

[11] A: I'm pretty sure I have it. It may take  
[12] me a while because a lot of my articles are on  
[13] microfiche and it's sometimes hard to —

[14] Q: Do it when you can. I understand. I've  
[15] tried to find it as well and had troubles.

[16] A: It was abstract, as you see in my  
[17] reference, and to — let's see, it was in the  
[18] Journal —

[19] Q: Obviously, do you have any recollection  
[20] as to whether, when they're talking about grinders  
[21] and drillers of brake bands, they're talking about  
[22] the manufacturing process or end users?

[23] A: I'm pretty sure they're talking about the  
[24] manufacture. But I'd have to go back and look at  
[25] that to make sure.

Page 39

Page

[1] Q: I understand. We can look at it when you  
[2] get it.

[3] If you would go to the next article,  
[4] please, sir.

[5] A: My time line only carries me up to the  
[6] passage of the Occupational Safety and Health Act,  
[7] and the articles that were in the notebook carry on  
[8] after that. So that's all I have in my time line,  
[9] luckily.

[10] Q: So we've discussed all the 1965 and  
[11] earlier articles that deal with brake linings in  
[12] any way under your time line?

[13] A: There may be others, but I haven't  
[14] included them in my time line.

[15] Q: Okay. Well, they're not on your time  
[16] line?

[17] A: That's correct.

[18] Q: The case — earlier we talked about case  
[19] reports. Are the case reports you were referring  
[20] to earlier about maybe a brake lining worker  
[21] getting asbestos-related disease, are those the  
[22] articles we just went through?

[23] A: Yes, sir.

[24] Q: Your work at the Raybestos Manhattan  
[25] plant, that was, I think, in the 1970s or '80s or

[1] when?

[2] A: I first went in the Raybestos plant in  
[3] the early '70s. I did a mortality study of workers  
[4] in that plant. The first publication is listed on  
[5] my CV of that plant. It actually appeared as a  
[6] report to the Congress of the United States and  
[7] appeared in the Congressional reports, the results  
[8] of a mortality study. Then we continued to analyze  
[9] and published, in 1976, I think, in the New York  
[10] Academy of Sciences' Occupational Cancer Symposium  
[11] the update of that. And that senior author on that  
[12] second publication was Robinson. It's listed in my  
[13] CV. So I was also involved in the industrial  
[14] hygiene survey of the Raybestos Manhattan plant.  
[15] This is the plant in Manheim, Pennsylvania.

[16] Then I also was involved in the  
[17] industrial hygiene and medical survey in the plant  
[18] — Raybestos plant in Charleston, South Carolina.

[19] Q: We'll focus on the Pennsylvania plant.

[20] A: The Pennsylvania plant was the one that I  
[21] spent the most time in.

[22] Q: The Pennsylvania plant, that's one that  
[23] you would have started the study of the plant  
[24] workers, I would say, in the 1970s?

[25] A: Yes, sir.

[1] Q: Now, brake products, would they be  
[2] defined as friable or nonfriable under the EPA  
[3] definition?

[4] A: I think the brake products in the final  
[5] form would be considered nonfriable. But I'm not  
[6] an expert on the EPA definition.

[7] Q: Do you know anything at all about any  
[8] trade associations or other organizations that  
[9] Chrysler may have been a member of?

[10] A: I haven't specifically looked at  
[11] Chrysler, no, sir.

[12] Q: Now, mesothelioma is a disease. I  
[13] think — was it first linked to asbestos exposure  
[14] by, I think, Dr. Wagner around 1960?

[15] A: Well, there were reports of mesothelioma  
[16] as early as 1943 from Germany. There were reports  
[17] from the Canadian asbestos mines in 1952, I think  
[18] that was. And there were other case reports that  
[19] occurred prior to Dr. Wagner's paper in 1960. And  
[20] his paper in 1960 was related — the first  
[21] comprehensive epidemiological evaluation of workers  
[22] engaged in the mining, milling and community  
[23] exposures dealing with asbestos.

[24] Q: So Dr. Wagner's work, that is, I think,  
[25] published in 1960, was the first epidemiological

Page 42

[1] study that linked asbestos exposure to the disease  
[2] mesothelioma?  
[3] A: By that time that was the conclusion that  
[4] he came to, yes, sir.  
[5] Q: And Dr. Wagner, in 1960, I think, was  
[6] studying mines in South Africa?  
[7] A: That's correct.  
[8] Q: Was that principally crocidolite?  
[9] A: That's correct.  
[10] Q: At what point in time were there  
[11] epidemiological studies that attempted to determine  
[12] that chrysotile could cause mesothelioma?  
[13] A: Let me just refer to this. Wagner did  
[14] mention chrysotile but didn't find any disease.  
[15] And he attributed that to the fact that they had  
[16] shorter latencies and there was a large turnover.  
[17] But then McDonald looked at chrysotile in the  
[18] Canadian mills and mines in the early '70s. So I  
[19] think most of the data on chrysotile  
[20] epidemiologically, case reports started occurring  
[21] when McDonald started looking at the chrysotile  
[22] mines and mills in the Canadian area.  
[23] Q: What — which is the first article you  
[24] have on your time line, just so I'll know?  
[25] A: Well, Cartier, 1957.

Page 43

[1] Q: I mean the epidemiological McDonald  
[2] study. There have been so many. That's what I'm  
[3] trying to find.  
[4] A: McDonald. I'm sorry.  
[5] Q: Is that the early '70s?  
[6] A: 1973. Let me get — asbestosis. The  
[7] first article that I have in my time line appeared  
[8] in IARC Scientific Publication No. 8 on the  
[9] chrysotile mines and mills. And there were two  
[10] papers, actually, one on asbestosis and the second  
[11] one on cancer from the mills, and they were both  
[12] IARC scientific publications. I have those. I  
[13] mean, I didn't bring them.  
[14] And then McDonald has another paper in  
[15] 1977 on exposure relationships and mesothelioma  
[16] and the proceedings of the Asbestos Symposium in  
[17] Johannesburg, South Africa. And then there are a  
[18] series of other —  
[19] Q: Others, that's fine. I'm just looking  
[20] for the earliest, and that's all I need. I think  
[21] you answered that.  
[22] When you would do air samplings, — and  
[23] I'm sure a lot of them were done while you were at  
[24] NIOSH — did NIOSH always use the phase contrast  
[25] microscopy in counting fibers?

Page 44

[1] A: Well, when I was at NIOSH, yes. Prior to  
[2] my coming and even after I came, for a while they  
[3] were also looking at total dust by using the  
[4] impinger method of sampling for particles per cubic  
[5] foot. And when I first came to NIOSH, we also, in  
[6] addition to the phase contrast microscopy, is used  
[7] these gigantic, high-volume samplers that we would  
[8] sit in the middle of an area of an asbestos plant  
[9] that would pull very high volumes of air through.  
[10] And those were looking at weight of dust and total  
[11] dust that was in the atmosphere. So — but for  
[12] personal samples, the only type that I ever took  
[13] were the membrane filter, PCM-type samples.  
[14] Q: In the work that you or others would have  
[15] done, I assumed for you, at NIOSH, did they always  
[16] use direct preparation techniques?  
[17] A: I'm not sure I know what you mean by  
[18] direct preparation.  
[19] Q: For instance, there are a number of  
[20] different types of techniques to sample for  
[21] particulate matter in the air, be it asbestos or  
[22] something else. One I know that the phase contrast  
[23] microscopy requires is taking a filter, adding  
[24] personal samples, for instance, having air drawn  
[25] with particulate matter in it. Then they count

Page 45

[1] what's on the filter. That's what I call the  
[2] direct method.  
[3] A: The answer to that is yes. And it was  
[4] directly related to the NIOSH 7400 analytical  
[5] methodology.  
[6] Q: Because that's what's required?  
[7] A: Right.  
[8] Q: You do not accept other types of methods  
[9] for comparison to OSHA PEL, would you?  
[10] A: I don't know what you're getting at, so I  
[11] don't know if I can answer that. But that's an  
[12] area that is somewhat beyond the area of my  
[13] expertise.  
[14] Q: Well, for instance, when you or others at  
[15] NIOSH were out there sampling to determine  
[16] workplace exposures, you would comply with the OSHA  
[17] requirements for sampling dust in the air, and that  
[18] would be 7400, the direct method?  
[19] A: Well, OSHA was using our methodology,  
[20] yes, sir.  
[21] Q: So it would comply with your own  
[22] methodology, right? Either way?  
[23] A: We developed the methodology that was  
[24] later employed by OSHA in their sampling.  
[25] Q: In sampling.

Page 46

Pag

[1] Have you ever sampled or looked at the  
[2] dust in brake drums to determine how much of that  
[3] dust is converted to forsterite?

[4] A: NIOSH has. I have not personally.

[5] Q: Are those articles at all in either  
[6] Exhibit 4 or your time line?

[7] A: I think they're mentioned in there. But  
[8] I don't know specifically if they determine the  
[9] amount of forsterite that's produced. I think it  
[10] depends upon the use of the brake and the heat of  
[11] the brake as to the amount of forsterite. I don't  
[12] know that I've ever seen it totally quantified, if  
[13] that's what you're getting at. But I'll certainly  
[14] agree with you that it does occur and to an extent.

[15] Q: I'll look through 4 and see if there are  
[16] quantifications, and we'll talk about that in a  
[17] minute. I'm not going to bore you with it now.

[18] But on that same line, in looking at the  
[19] drum dust, do you know of quantifications of the  
[20] amount of fibers, asbestos fibers, now that would  
[21] be greater than five microns in length that have  
[22] been seen in various studies?

[23] A: I think that — you mean after the brake  
[24] is used or —

[25] Q: Brake drums and discs.

Page 47

Page

[1] A: In the composition of the brake?

[2] Q: After it's been used.

[3] A: I think the Lorimer paper goes into some  
[4] quantification, talks about the average amount of  
[5] fibers found in the brake dust. I think his  
[6] greatest concentrations were found three to five  
[7] feet away from the brake drum after it had been  
[8] blown, and the average concentration was somewhere  
[9] around 15 fibers per cc. greater than five micron.  
[10] There's a table in there if you want me to point it  
[11] out.

[12] Q: Yeah, I think I found it. Let me look  
[13] through this. I'm just talking about the size and  
[14] length of the fibers, that they were —

[15] A: Well, they were only counting greater  
[16] than five micron in length. So they weren't  
[17] counting below five micron in length. So what I  
[18] was referring to would have referred to those that  
[19] were greater than five micron.

[20] Q: The manufacturing process for making the  
[21] brake lining, that would obviously include various  
[22] bonding resins and Lord-only-knows-what to make it  
[23] stay together, right?

[24] A: Right.

[25] Q: And part of the brake lining is obviously

[1] — or some of them would have contained asbestos,  
[2] right?

[3] A: Yes.

[4] Q: The bonding agents, mastics, resins,  
[5] whatever they are, would affect the aerosol dynamic  
[6] properties of the asbestos fibers if they're ever  
[7] released?

[8] A: They could.

[9] Q: And if bonding agents or mastics were  
[10] still attached to an asbestos fiber, that could  
[11] prevent it from being inhaled and retained in the  
[12] lungs?

[13] A: It could, yes, sir.

[14] Q: I'm going to look through your articles  
[15] and things like this. I'm sure I'll have some  
[16] questions. But I'd like to look through this, and  
[17] at some point in time I'm going to take — I'll  
[18] just do this later.

[19] A: What is that?

[20] Q: Your disclosure, one of the things we  
[21] get. Maybe I can just ask you this now. I'm going  
[22] to talk about these articles. I represent  
[23] Chrysler, and we've got a case next week. And I  
[24] don't know if you've seen this, but this is the  
[25] disclosure that I have given.

[1] A: I think this is a standard disclosure.

[2] Q: Yeah, it's a standard disclosure.

[3] Let me ask a question and you can tell me  
[4] if I'm wrong. I'm trying to find out if I've  
[5] touched on the areas you were going to testify  
[6] about Chrysler Corporation. For instance, when you  
[7] get to trial, is there anything I haven't covered?  
[8] And if there is, let me know.

[9] MR. HAINES: Object to the question  
[10] of having him anticipate, without knowing  
[11] how he's going to respond to questions that  
[12] we ask him. And to say, well, have you  
[13] testified as to anything about Chrysler, I  
[14] don't think that's a proper question.

[15] MR. ELLISTON: Excuse me. At this  
[16] point I want to register an objection.  
[17] Plaintiff's counsel is going beyond simply  
[18] stating an objection to the form. Under  
[19] the new rules, anything beyond "objection  
[20] to form" is inappropriate. So I object to  
[21] plaintiff's counsel going beyond that  
[22] objection.

[23] MR. HAINES: Duly noted.

[24] Q: (By Mr. Harton) You can respond. You  
[25] can respond, Dr. Lemen.

Page 50

[1] A: I've — as far as I know, unless I'm  
[2] asked questions that I can't anticipate, you've  
[3] covered everything. But, I mean, I have to put  
[4] that in, because if plaintiff's counsel asked me a  
[5] question and you haven't anticipated it, I will —  
[6] and I knew the answer, I would give an answer.

[7] MR. HARTER: Well, let me look  
[8] through some articles and I'll let some  
[9] other folks talk to you.

**CROSS-EXAMINATION**

[10] BY MR. FALK:

[11] Q: Good morning, Doctor. My name is Eric  
[12] Falk, I represent Allied Signal.

[13] My first question to you is, has anybody  
[14] shown you any documents pertaining to Allied Signal  
[15] or its predecessor, the Bendix Corporation?

[16] A: I don't believe so.

[17] Q: Okay. Have you ever conducted or worked  
[18] on any industrial hygiene surveys at airline  
[19] maintenance facilities?

[20] A: Specifically looking at asbestos, no.  
[21] But I have at airline maintenance facilities, and  
[22] I've published on — just so the record is  
[23] straight — on principally looking at  
[24] cardiovascular disease among airline refueling  
[25]

Page 51

[1] operations, around airline maintenance facilities.  
[2] And we've published on that from exposure to carbon  
[3] monoxide, but not as it relates to asbestos.

[4] Q: Okay. And I take it, then, you certainly  
[5] have not participated in any industrial hygiene  
[6] surveys at either Dallas-Ft. Worth Airport or Love  
[7] Airfield?

[8] A: That's correct.

[9] Q: Okay. I want to look at the — talk to  
[10] you a bit about chrysotile epidemiology. And I  
[11] want to focus on epidemiology. And let's put off  
[12] to the side for a moment animal studies and then  
[13] we'll get back to that.

[14] Would you agree that the McDonald cohort  
[15] in Canada is the largest ongoing chrysotile-only  
[16] cohort?

[17] A: I would agree that it's probably the  
[18] largest. I don't know of others that are larger.  
[19] We do have a study ongoing that was initiated by  
[20] NIOSH while I was still at NIOSH.

[21] Q: Is that the South Carolina —

[22] A: No, no. Well, that's one that was done.  
[23] But we have an ongoing study, which the results  
[24] have not been published yet. And I'm not a part of  
[25] it anymore because I'm not at NIOSH. But I

Page 52

[1] initiated the study of the chrysotile mines in the  
[2] Siberian area of Russia. It's a joint study with  
[3] NIOSH, the Finnish Institute and the Russian  
[4] Institute. And the only results so far, to my  
[5] knowledge, that have been published are the  
[6] industrial hygiene samples of several hundreds of  
[7] samples that were taken in that. And that is  
[8] bigger, as far as volume, than the McDonald. But  
[9] the epidemiology and medical are still ongoing, to  
[10] the best of my knowledge.

[11] Q: So I think the first part of your answer  
[12] was that if we looked at published epidemiology you  
[13] would agree that the McDonald Quebec cohort is the  
[14] largest published cohort?

[15] A: I agree.

[16] Q: Are you familiar with the articles of the  
[17] McDonald group published in '97 and '98, about five  
[18] or six of them?

[19] A: I think I've read every one that Corbett  
[20] and his wife Allison have put together. And I know  
[21] both of them pretty well, so —

[22] Q: Okay. Then maybe we can short-circuit  
[23] this. And rather than breaking out the articles,  
[24] I'm going to try to summarize the results. You  
[25] tell me if my summaries are wrong, and if we're

Page 53

[1] right we're going to move on.

[2] A: Okay.

[3] Q: They found that the excess of lung cancer  
[4] mesothelioma arose predominantly from the central  
[5] area of the Thetford mines, correct?

[6] A: I believe that's correct.

[7] Q: And they also found there was a high  
[8] level of tremolite contamination in the central  
[9] area of the Thetford mines, correct?

[10] A: I believe that's true.

[11] Q: And they found that even within the  
[12] central area of the Thetford mines, the excess does  
[13] not arise until you get to exposures that are  
[14] roughly at five to six million particles per cubic  
[15] foot; is that correct?

[16] A: Somewhere in that neighborhood. I can't  
[17] remember the exact number.

[18] Q: Or if we wanted to just put it in some  
[19] kind of lingo, the old ACGIH standard, roughly in  
[20] that neighborhood?

[21] A: I believe that's what they were using.  
[22] The authors concluded that it was — from an  
[23] epidemiological point of view, the tremolite, that  
[24] was the reason for the excess in mesothelioma,  
[25] correct. I believe that is a part of the

Page 54

Page

[1] conclusion. But I think that McDonald also  
[2] concluded that they had found — if I can remember  
[3] exactly how they put it, they had found  
[4] mesothelioma to occur in ones that did not have  
[5] tremolite contamination, but very few.

[6] Q: Okay. Those were from the peripheral  
[7] areas of Thetford?

[8] A: Yes, sir.

[9] Q: And they did not find an excess rate in  
[10] the peripheral areas, correct?

[11] A: They did not find it, as compared to a  
[12] standard population. But they did find  
[13] mesothelioma.

[14] Q: One of the things that the McDonald's  
[15] focused on as they looked at the possibility of  
[16] tremolite contamination was bio-persistence and  
[17] durability of fibers; correct?

[18] A: That's correct.

[19] Q: And tremolite would fit, would be a  
[20] candidate that would fit the issue of  
[21] bio-persistence and durability, correct?

[22] A: If you're talking about, simply put,  
[23] residence time in the lung, that's correct.

[24] Q: Chrysotile is not as bio-persistent and  
[25] is not as durable, correct?

Page 55

Page

[1] A: Chrysotile gets into the lung and gets  
[2] out of it quicker than the amphibole-type fibers.

[3] Q: And you're familiar with the clearance  
[4] rates and the studies on the clearance rates for  
[5] chrysotile, correct?

[6] A: Yes, sir.

[7] Q: Are you familiar with any studies  
[8] pertaining to man-made mineral fibers, their  
[9] biopersistence and durability and their possible  
[10] impact on the development of mesothelioma?

[11] A: By man-made mineral fibers, do you  
[12] include such things — are you talking just  
[13] epidemiology now or are you talking animal studies?

[14] Q: This would be animal studies.

[15] A: If you're talking — do you include  
[16] refractory ceramic fiber in that definition?

[17] Q: Yes, fiberglass refractory ceramic fiber.

[18] A: There are fairly new animal studies on  
[19] refractory fibers coming out of Geneva-sponsored  
[20] studies by I guess it's Thermal Insulation  
[21] Manufacturers Association that have shown  
[22] mesothelioma occurring in fairly high numbers in  
[23] animals that have been exposed to respirable  
[24] refractory ceramic fibers. And those are just in  
[25] the process of being published. I happen to have

[1] copies of the pre-published articles.

[2] Q: And have you read Dr. Hesterberg's work  
[3] on man-made mineral fibers?

[4] A: Yes, sir.

[5] Q: If we were to look solely at  
[6] epidemiology, is it still your opinion, that is,  
[7] from an epidemiological point of view, there is a  
[8] lower risk of mesothelioma among chrysotile  
[9] populations as opposed to amphibole populations?

[10] A: In the 1996 publication that I did with  
[11] Leslie, Stayner and Dankovic in the American  
[12] Journal of Public Health, we concluded that  
[13] mesothelioma can occur in chrysotile populations,  
[14] but it is at a lower rate than it would occur in an  
[15] amphibole population, but still at a significant  
[16] level.

[17] Q: Do you still agree that case reports are  
[18] not as strong as an epidemiological study?

[19] A: Of course.

[20] Q: Kind of a handy layman's analogy that  
[21] I've used.

[22] And I'll throw this out to you, and you  
[23] tell me whether you like it or not, is that a case  
[24] report can frame the question, the epidemiology  
[25] provides the answer. Does that sound acceptable?

[1] A: Case reports are usually what we use to  
[2] generate hypotheses for conducting epidemiological  
[3] studies. So I think we're saying the same thing.

[4] Q: Do you agree with the proposition that an  
[5] epidemiologist should look for a relative risk of  
[6] two or greater in order to associate an agent with  
[7] a disease?

[8] A: I don't agree with that specifically, no.

[9] Q: Okay. Do you agree that that is a view  
[10] held by many epidemiologists in your field?

[11] A: I won't put many. I'll put that it is a  
[12] view held by some epidemiologists in my field.

[13] Q: What relative risks do you look for?

[14] A: It depends on the size of the cohort.  
[15] You could have a significant excess relative risk  
[16] if you had a large cohort and a large exposure  
[17] than, say, even at 1.5 or even lower. It depends  
[18] upon the population you're studying. And I think  
[19] that arbitrarily assigning 2 as the cutoff point is  
[20] not something that I would do, and it's not  
[21] something that we did when I was at NIOSH.

[22] Q: Are you aware of any epidemiological  
[23] study of automobile mechanics or brake repair  
[24] workers, end users, not manufacturing plants,  
[25] showing an increased risk of mesothelioma in the

Page 58

Page 60

[1] populations?

[2] A: Epidemiologic studies?

[3] Q: Um-hum.

[4] A: I would have to go back and look at my  
[5] book. I can't answer that question right now.

[6] MR. HARTON: This one? Here. Go  
[7] ahead.

[8] Q: (By Mr. Falk) One of the MedLine  
[9] summaries you have in your book is the Weitowitz  
[10] and Rodelsperger 1994 article.

[11] You have a MedLine summary of that  
[12] article in your notebook. Have you read the  
[13] article itself?

[14] A: I have sometime ago. I haven't read it  
[15] recently.

[16] Q: Do you recall what the author's  
[17] conclusion was?

[18] A: Well, if you know exactly where it's at  
[19] in here, it would help me.

[20] Q: It's one of the larger, bold print.

[21] MR. HARTON: Towards the front, yeah.  
[22] Very early.

[23] THE WITNESS: It was one of the very  
[24] first ones. I remember that. Yeah, okay.  
[25] Okay.

Page 59

Page 61

[1] Q: (By Mr. Falk) When was the last time you  
[2] looked at that article, Doctor?

[3] A: I can't remember.

[4] Q: Okay. Do you recall the conclusions of  
[5] the authors of that article?

[6] A: As in the summary, yes, sir.

[7] Q: The conclusions were that they found no  
[8] increased risk of mesothelioma in the car mechanics  
[9] in Germany?

[10] A: That none occurred, that's correct.

[11] Q: Are you aware that Drs. Weitowitz and  
[12] Rodelsperger have been studying car mechanics,  
[13] their exposure and disease rate, in Germany since  
[14] the mid 1980s?

[15] A: I don't know when they started.

[16] Q: Are you aware of any of their prior work?

[17] A: Not other than what's in here.

[18] Q: Is it still true that you don't think of  
[19] yourself as an expert in dust dispersion and  
[20] aerosol dynamics?

[21] A: I've never presented myself as that.

[22] Q: You have not participated in any fiber  
[23] release testing of friction products?

[24] A: No, sir. Here is the book back, unless  
[25] you want —

[1] MR. HARTON: I don't know if you —  
[2] thanks.

[3] Q: (By Mr. Falk) Other than the Phoenix  
[4] ground water case, which I know is not an asbestos  
[5] case, have there been any other cases where your  
[6] testimony has been excluded or limited?

[7] A: Not to my knowledge.

[8] Q: Okay.

[9] A: There have been cases where there's  
[10] summary judgment, but I don't think it was directed  
[11] at me particularly.

[12] Q: I don't want to get into the Phoenix  
[13] ground water case, not unless we have about an hour  
[14] to talk on that.

[15] Are you aware of any attempts to quantify  
[16] the projected mortality in brake repair workers?

[17] A: No.

[18] Q: I want to take a look at some of the  
[19] articles that you cited in your article with  
[20] Drs. Dankovic and Stayner.

[21] A: Yes, sir.

[22] Q: Okay. Do you have that article with you?

[23] A: Yeah. It's somewhere around here.

[24] Q: Just so we can read from it together  
[25] without me looking over your shoulder.

[1] A: I don't know how it fell apart, but — in  
[2] fact, I've got it right here.

[3] Q: If you could turn to Table 1.

[4] A: Yes.

[5] Q: Okay. There are two articles I'm  
[6] interested in that you put in the table as showing  
[7] excesses of either lung cancer, mesothelioma or  
[8] both. The first one is the Finkelstein article.

[9] A: The automotive, yes, sir.

[10] Q: Do you have a copy of that with you?

[11] A: No, I don't.

[12] Q: Okay. I'll pass it over. I just want to  
[13] go through that rather quickly.

[14] Is it true that, if you turn to page 128  
[15] of the article, they found that among men there  
[16] were no diseases associated with a significantly  
[17] increased SMR?

[18] MR. HAINES: Hang on. Doctor, do you  
[19] need a minute to review the article?

[20] Q: (By Mr. Falk) I'm sorry. Page 128, I'm  
[21] looking at.

[22] A: Let me just look at it for a minute.

[23] Okay. What is your question?

[24] Q: Is true that Dr. Finkelstein found among  
[25] men there were no diseases associated with a

Page 62

Page

[1] significantly-increased SMR except for laryngeal  
[2] cancer?  
[3] A: I'm having trouble reading this.  
[4] Q: It's as good a copy as I could get.  
[5] A: You're talking overall, or what are  
[6] you — you need to point that out. It's probably  
[7] my bifocals.  
[8] Q: That's quite all right. Okay.  
[9] A: You say 128.  
[10] Q: Right. Okay. Right here. Among —  
[11] first off, they studied two automotive parts plants  
[12] in Ontario. correct?  
[13] A: Right.  
[14] Q: And brake parts were made at those  
[15] plants. correct?  
[16] A: To my knowledge, that's correct.  
[17] Q: Okay. And here on page 128 they say that  
[18] among men, no diseases except for laryngeal cancer  
[19] were associated with a significantly increased SMR.  
[20] Have I read that part correctly?  
[21] A: That's correct.  
[22] Q: And then they go on to say that there  
[23] were no trends of increasing SMR with increasing  
[24] length of employment.  
[25] A: Right.

[1] Q: The next one I want to talk about in  
[2] Table 1 is the McDonald article.  
[3] A: Right.  
[4] Q: Okay. This is the study of the  
[5] Connecticut friction plant.  
[6] A: Is this Connecticut or is this the —  
[7] Q: I think it's Connecticut.  
[8] A: I thought — yeah. Okay.  
[9] Q: Okay.  
[10] A: It was — Connecticut was one plant,  
[11] yeah.  
[12] Q: Yes. Okay. First off, the McDonald's  
[13] found no mesotheliomas in that plant. correct?  
[14] A: That's what they report, yes, sir.  
[15] Q: Okay. And turning to lung cancer, the  
[16] increased mortality that they found was due mostly  
[17] to the people that had worked one year or less at  
[18] the factory. correct?  
[19] A: Well, I don't know if you said it the  
[20] right way. They say that excluding men who had  
[21] worked for less than a year, there was possible  
[22] evidence of some increased risk of lung cancer with  
[23] increasing exposure. So it was occurring in those  
[24] that were greater than one year.  
[25] MR. HAINES: That's actually the

Page 63

Page

[1] Q: Have I read that correctly?  
[2] A: Yes, sir.  
[3] MR. HAINES: Can I see it?  
[4] MR. FALK: Sure. When you're done  
[5] with that I have a few more questions on  
[6] that article, if you don't mind me looking  
[7] over your shoulder.  
[8] THE WITNESS: No.  
[9] Q: (By Mr. Falk) Turn to page 129.  
[10] They then did a case control analysis in  
[11] order to analyze whether there was an association  
[12] between the employment and the asbestos-related  
[13] diseases that they thought they had found, correct?  
[14] A: Right.  
[15] Q: And they concluded the case control  
[16] analysis revealed no association between the risk  
[17] of lung cancer and employment in a department where  
[18] asbestos had been used or duration of employment.  
[19] A: Correct.  
[20] Q: And they go on and they say that even  
[21] within the laryngeal cancers, none of the laryngeal  
[22] cancers had worked in an area where asbestos had  
[23] been used.  
[24] Correct?  
[25] A: Right.

[1] opposite of what he said.  
[2] THE WITNESS: I think, if I've — you  
[3] said less than one year.  
[4] Q: (By Mr. Falk) Less than or equal to one  
[5] year.  
[6] A: Right here. Unless they've misstated it  
[7] in there.  
[8] Q: Let's go to page 155 of the article. And  
[9] they talk about that the most confusing aspect of  
[10] the study is the fact that the only subcohort with  
[11] SMRs clearly above expectation comprises men  
[12] employed for less than one year.  
[13] Correct?  
[14] A: That's total SMRs. That's in contrast to  
[15] what you were asking about lung cancer.  
[16] Q: Then they go on to say, thus, were it not  
[17] for the subjects with minimal employment or dust or  
[18] dust exposure or both, the mortality experience of  
[19] this cohort would be close to expected.  
[20] A: That's what they say there.  
[21] Q: Okay. Workers who work less than one  
[22] year, we call those transient workers. Would that  
[23] be a good way to phrase it?  
[24] A: They may not like to be called that.  
[25] Q: I understand. Scientifically, you tend

Page 66

Page 68

[1] to call them transient workers?

[2] A: Yes.

[3] Q: Transient workers generally just have,  
[4] perhaps because of their lifestyles, just higher  
[5] risks for many diseases, many conditions, correct?

[6] A: That's possible.

[7] Q: Okay.

[8] THE WITNESS: Can we go off the  
[9] record for just a second?

[10] (Recess taken.)

[11] Q: (By Mr. Falk) Doctor, do you still agree  
[12] that, with regard to fiber length, the  
[13] preponderance of the evidence up until the 1980s  
[14] was that fibers less than five microns in length  
[15] did not lead to asbestos-related disease?

[16] A: There's a preponderance of the evidence  
[17] to answer yes, but there is some evidence there may  
[18] be disease in these smaller, but that was the  
[19] preponderance of the evidence.

[20] Q: And you still believe that the longer  
[21] fibers tend to be more carcinogenic than shorter  
[22] fibers?

[23] A: Yes, sir.

[24] Q: You mentioned the Camus article. Are you  
[25] familiar with any follow-ups or letters to the —

Page 67

[1] A: The what article?

[2] Q: I call it Camus.

[3] A: Camus?

[4] Q: Camus. I call it Camus because of the  
[5] French author.

[6] A: Well, I didn't take French. I call it  
[7] Camus.

[8] Q: It could be either one.  
[9] You mentioned that earlier. Are you  
[10] aware of any of the follow-up or letters to the  
[11] editor that have come since that article?

[12] A: Well, I know the editorial that  
[13] accompanied the article. I have not read the  
[14] follow-up letters.

[15] MR. FALK: Okay. That's all I have,  
[16] sir. Thank you.

**CROSS-EXAMINATION  
BY MR. GUSTAFSON:**

[19] Q: Dr. Lemen, I'm Ivan Gustafson of  
[20] Pittsburgh Corning.  
[21] Have your opinions changed about  
[22] Pittsburgh Corning since this time last week?

[23] A: No.

[24] Q: Have you seen anything new in the last  
[25] seven days to change your opinion about Pittsburgh

[1] Corning?

[2] A: No.

[3] Q: As a housekeeping question, part of  
[4] Exhibit 5 was Volume I of the Raper deposition. Is  
[5] that the one that you had brought with you and the  
[6] one we had marked, or the one that we sent was a  
[7] copy of one?

[8] A: Did I maybe make a copy? It's what was  
[9] sent to me. And the first part is missing every  
[10] other page. So it's only a portion of it. And I  
[11] didn't call back and ask for another copy because I  
[12] didn't really rely that much upon it.

[13] Q: So you received the Volume I of the Raper  
[14] deposition in alternate page format, if you will?

[15] A: Exactly like it is there, yes, sir. And  
[16] that's just the first part of it. The second page  
[17] is four-page format.

[18] Q: With respect to the classification of  
[19] persons called commercial airline mechanics, is  
[20] that occupation one that has been identified by a  
[21] government agency or state agency, to your  
[22] knowledge, to have been at risk from or at risk for  
[23] asbestos-related diseases?

[24] A: I don't know. I don't know of any.

[25] Q: Are you aware — and I guess it would be

Page 69

[1] true, then, in your years of government work and  
[2] following the literature, you're not aware of any  
[3] pronouncement or proclamation from any government  
[4] agency stating that commercial aircraft mechanics  
[5] were an at-risk group for asbestos-related  
[6] diseases, is that right?

[7] A: I don't know of any.

[8] Q: Did you review the work history of  
[9] Mr. Raper?

[10] A: Only as presented in the material that I  
[11] received.

[12] Q: Did you notice if he worked at a micarda  
[13] plant for some period of time?

[14] A: I'd have to look at it again.

[15] MR. JOHNSON: I've taken the  
[16] deposition out of there.

[17] THE WITNESS: It should be on this. I  
[18] think. Where did you see that? I'm just  
[19] trying to —

[20] Q: (By Mr. Gustafson) I believe it was 63,  
[21] 64, maybe the third or fourth.

[22] A: You said micarda.

[23] Q: Micarda plant in Hampton, South Carolina.

[24] MR. HAINES: Herndon Motor Freight,  
[25] Hampton, South Carolina.

Page 70

Pag

[1] Q: (By Mr. Gustafson) Before that page. I  
[2] hate to do this, but let me come over there.  
[3] A: Okay. I saw Westinghouse, but I  
[4] wasn't — yes, sir.  
[5] Q: Are you familiar with that product,  
[6] micarda?  
[7] A: No, sir.  
[8] MR. GUSTAFSON: That makes it short.  
[9] All right. That's it.  
[10] MR. FALK: Good job.  
[11] MR. HAINES: Next.  
[12] CROSS-EXAMINATION  
[13] BY MR. JOHNSON:  
[14] Q: Dr. Lemen, my name is Jonathan Johnson.  
[15] I'm here today representing Georgia Pacific. I  
[16] just have a few questions for you.  
[17] In this case have you been given any  
[18] documents to review that directly refer to Georgia  
[19] Pacific or a company called Bestwall?  
[20] A: Other than what I've shown here, that's  
[21] the only material I've been given.  
[22] Q: Do you have any reason to believe that  
[23] Mr. Raper worked with or around any joint compound?  
[24] MR. HAINES: Object to the form.  
[25] Go ahead.

[1] manufactured after 1986 would have contained  
[2] asbestos?  
[3] A: I don't know the answer. They could  
[4] have. By law they could have. But I don't know.  
[5] Q: Do you know whether Georgia Pacific ever  
[6] manufactured any joint compound that contained  
[7] asbestos?  
[8] A: I don't know.  
[9] Q: Are you aware of any studies regarding  
[10] the impact of working with or around joint  
[11] compounds on the health of the workers?  
[12] A: I know that there are studies that show  
[13] that carpenters and other people employed that  
[14] would use joint compounds but have other exposures  
[15] are at increased risk of developing  
[16] asbestos-related diseases.  
[17] Q: Okay. Do you know of any studies that  
[18] would say that people other than those you just  
[19] mentioned would be at risk just because they happen  
[20] to be in the vicinity?  
[21] A: Dr. Selikoff did some research in his  
[22] group on looking at bystanders, if that's what  
[23] you're getting at. And so there are studies out  
[24] showing that workers that didn't work directly with  
[25] an asbestos product but were working in the

Page 71

Page

[1] THE WITNESS: It's my understanding  
[2] that he did. But I haven't been asked to  
[3] specifically identify the products or  
[4] anything of that nature.  
[5] Q: (By Mr. Johnson) What's your  
[6] understanding that he did based on?  
[7] A: The material that I read in here of his  
[8] work history. And that's it.  
[9] Q: And that does include Mr. Raper's  
[10] deposition, does it not?  
[11] A: Yes, it does.  
[12] MR. HAINES: It does.  
[13] Q: (By Mr. Johnson) Did you see that in  
[14] Mr. Raper's deposition he testified that he — his  
[15] claim with respect to joint compounds was during  
[16] the time period 1986 to 1998?  
[17] MR. HAINES: Object to form.  
[18] THE WITNESS: I don't remember the  
[19] exact dates.  
[20] Q: (By Mr. Johnson) Do you have any  
[21] knowledge as to whether any of the joint compounds  
[22] that Mr. Raper may have worked around contained any  
[23] asbestos at all?  
[24] A: I don't know.  
[25] Q: Do you know whether any joint compounds

[1] vicinity of others that were working with asbestos  
[2] products were at an increased risk of developing  
[3] disease.  
[4] Q: Okay. And what specifically are the  
[5] studies by Dr. Selikoff that you're referring to?  
[6] A: Well, the one that shows that they're at  
[7] risk by looking at exposure is a study that Reitze,  
[8] R-E-I-T-Z-E — I think it's listed in my time  
[9] line — has conducted, looking at people directly  
[10] applying asbestos insulation and then looking at  
[11] welders and others that are not directly in the  
[12] area but around the area that have higher exposure  
[13] levels to asbestos. And that's the type of work  
[14] that he was doing.  
[15] Q: Okay. Did that study include anything  
[16] with respect to joint compounds?  
[17] A: I don't know. I don't think so.  
[18] Q: Do you think there may be differences  
[19] between asbestos insulation and joint compounds?  
[20] A: Yes.  
[21] Q: Sir, do you have any knowledge as to  
[22] whether joint compounds would contain friable  
[23] asbestos?  
[24] A: You mean friable?  
[25] Q: Friable, sorry.

Page 74

Page 76

(1) A: I don't know exactly. I'm not an expert  
(2) on joint compounds.

(3) MR. JOHNSON: Okay. Thank you, sir.

(4) CROSS-EXAMINATION

(5) BY MR. ELLISTON:

(6) Q: Dr. Lemen, as you know, my name is Gary  
(7) Elliston and I'm here on behalf of several  
(8) companies.

(9) Would you agree, sir, that the U.S.  
(10) Public Health Service has been in existence since  
(11) 1798?

(12) A: Yes, sir.

(13) Q: The U.S. Public Health Service recently  
(14) celebrated their 200th anniversary, didn't they?

(15) A: Yes, sir.

(16) Q: How long were you a member of that  
(17) organization?

(18) A: From 19 — September of 1970 to March 1  
(19) of 1996.

(20) Q: The Surgeon General is actually the head  
(21) of the U.S. Public Health Service, isn't he?

(22) A: Yes.

(23) Q: He or she?

(24) A: He or she.

(25) Q: The United States Public Health Service

Page 75

Page 77

(1) has studied asbestos and its potential health  
(2) hazards since the 1930s, hasn't it?

(3) A: That's correct.

(4) Q: The U.S. Public Health Service bears  
(5) responsibility for the health of a variety of  
(6) people and organizations, including the Indian  
(7) reservations, Merchant Marines, that type of thing,  
(8) don't they?

(9) A: They don't do the Merchant Marine  
(10) anymore. That — under President Reagan they took  
(11) that responsibility away from us. But they do the  
(12) federal prisons still and Indian reservations.

(13) Q: The U.S. Public Health Service has  
(14) addressed the potential hazards of asbestos and how  
(15) to control those hazards since at least the 1930s,  
(16) haven't they?

(17) A: Yes, sir.

(18) Q: The United States Government first issued  
(19) any type of regulation and enforceable regulation  
(20) concerning the exposure levels to asbestos in 1960,  
(21) didn't they?

(22) A: I think I now have information under the  
(23) Walsh-Healey that they actually — the first was  
(24) 1952. But it's in that same time period. I  
(25) recently found some reference in the Walsh-Healey

(1) Act to a 1952 mention. I could provide that to  
(2) you. I don't have it with me.

(3) Q: The first time the U.S. Government  
(4) created or issued or published any type of warning  
(5) to be used in the workplace or on products  
(6) containing asbestos was in 1972, when OSHA  
(7) regulations were created; correct?

(8) MR. HAINES: Object to form.

(9) THE WITNESS: Are you referring to  
(10) the — including in the 1972 criteria  
(11) document that NIOSH put out to OSHA, or are  
(12) you saying just for the OSHA standard? But  
(13) '72 is correct, in either case.

(14) Q: (By Mr. Elliston) Okay, sir. You  
(15) actually participated on the committee that issued  
(16) the 1972 criteria document for NIOSH, didn't you?

(17) A: My role in that criteria document was not  
(18) a decision-making role but one of putting together  
(19) the tables that appeared in the appendix of the  
(20) criteria document showing the technical feasibility  
(21) of achieving the recommendation. But I did not  
(22) have any role in making the decision what the  
(23) standard was at that time.

(24) Q: Were you a member of the committee?

(25) A: I don't know that you'd call it — I

(1) wasn't a member of a committee. I was a worker  
(2) that was told to put together and take all the  
(3) information the Public Health Service had collected  
(4) up to that point in time and put it in the tables  
(5) that appeared in the back of that book. So if you  
(6) call that a part of a committee, I guess yes, the  
(7) answer is yes. But I wasn't — it wasn't my  
(8) decision at that time as to what the standard would  
(9) be.

(10) Q: Was Dr. Joseph Wagner one of the members  
(11) of the group that had decision-making authority?

(12) A: I think his name's in the criteria  
(13) document as being there. I don't think my name  
(14) appears in the criteria document as being on any  
(15) committee. But I did work for Dr. Joseph Wagner at  
(16) that time.

(17) Q: Was Dr. Joseph Wagner one of the members  
(18) who had decision-making authority for that 1972  
(19) NIOSH criteria document?

(20) A: I believe he was.

(21) Q: Now, when NIOSH issues their criteria  
(22) documents and makes recommendations to OSHA, those  
(23) recommendations are based upon the best available  
(24) science and what NIOSH believes is best for the  
(25) workers from a health perspective, isn't it?

Page 78

[1] A: That's correct.  
[2] Q: In that 1972 criteria document there was  
[3] a permissible exposure level recommended for  
[4] asbestos exposure in the workplace, wasn't there?  
[5] A: Yes, sir.  
[6] Q: Would you agree, sir, that in 1972, that  
[7] OSHA, NIOSH, the U.S. Public Health Service, they  
[8] were all aware of the potential hazards of asbestos  
[9] and how those hazards should be dealt with in the  
[10] workplace?  
[11] A: All of the hazards of asbestos? I don't  
[12] think in 1972 they were aware of everything they  
[13] know today about asbestos, but I'm not sure I  
[14] understand your question. I need a little  
[15] clarification on it.  
[16] Q: In your opinion, sir, were NIOSH, OSHA  
[17] and the U.S. Public Health Service aware of all the  
[18] scientific data and medical research concerning  
[19] asbestos hazards and how those hazards should be  
[20] controlled in the workplace as of 1972?  
[21] A: I believe —  
[22] MR. HAINES: Object to form.  
[23] THE WITNESS: I believe they would  
[24] have known or should have known.  
[25] Q: (By Mr. Elliston) In 1972, this warning

Page 79

[1] that was required by OSHA was required not only to  
[2] be put on thermal insulation products but it was  
[3] also required to be posted in the workplace  
[4] wherever asbestos might be used, wasn't it?  
[5] A: I believe that's correct.  
[6] Q: In fact, the OSHA regulations are  
[7] directed toward the employer of the individual  
[8] worker, aren't they?  
[9] A: Yes, sir.  
[10] Q: Are you also aware, sir, that under the  
[11] laws of the state of Texas since 1958, that  
[12] exposure levels to asbestos were required to be  
[13] kept below five million particles per cubic foot of  
[14] air?  
[15] A: I have heard that. I have not seen that  
[16] law, to the best of my knowledge.  
[17] Q: Have you been provided any industrial  
[18] hygiene information or dust sampling results that  
[19] would indicate that Mr. Raper was ever exposed to  
[20] levels of asbestos above the TLV or PEL in  
[21] existence at the time of that exposure?  
[22] A: No.  
[23] Q: Did you agree with the recommendations  
[24] that were made in the 1972 criteria documents by  
[25] NIOSH?

Page

[1] A: At that point in my career, yes, sir.  
[2] Q: Those were recommendations of exposure  
[3] levels that you yourself would have been willing to  
[4] work in or to have had your family work in, isn't  
[5] that true?  
[6] A: At that time, yes.  
[7] Q: Would you agree, sir, that that group,  
[8] that decision-making group from the 1972 criteria  
[9] document, while addressing asbestosis, were also  
[10] concerned about the potential cancer risk of  
[11] workers in the workplace?  
[12] A: Yes, sir.  
[13] Q: Has anyone made you aware, sir, of  
[14] Dr. Egleman's sworn testimony that the members of  
[15] that committee weren't concerned or did not care  
[16] whether workers developed cancer?  
[17] MR. HAINES: Object to the form.  
[18] THE WITNESS: I can't tell you what  
[19] Dr. Egleman — you know, what was in his  
[20] mind, but I know what my opinion is.  
[21] Q: (By Mr. Elliston) And your opinion is  
[22] that those individuals were very concerned about  
[23] the health and safety of workers in the workplace,  
[24] isn't it?  
[25] A: That they were concerned, yes.

Page

[1] Q: Have you reviewed any corporate documents  
[2] or depositions with any corporate representatives  
[3] from Armstrong World Industries or Armstrong Cork  
[4] Company?  
[5] A: I don't recall having done that.  
[6] Q: Have you reviewed any documents or any  
[7] depositions of any corporate representatives of the  
[8] Ruberoid Company or GAF?  
[9] A: I don't recall doing that, no, sir.  
[10] Q: Have you reviewed any corporate documents  
[11] or depositions of corporate representatives of the  
[12] Dana Corporation?  
[13] A: I don't believe so.  
[14] Q: Have you reviewed any corporate documents  
[15] or depositions of corporate representatives of  
[16] Flexitallic?  
[17] A: I don't believe so.  
[18] Q: Have you reviewed any corporate documents  
[19] or depositions of corporate representatives of  
[20] Turner and Newell?  
[21] A: I don't believe so.  
[22] Q: Have you reviewed any corporate documents  
[23] or depositions of corporate representatives of the  
[24] CertainTeed Company?  
[25] A: I don't believe so.

Page 82

[1] Q: Have you reviewed any corporate documents  
[2] or depositions of corporate representatives of the  
[3] Riley Stoker Company?

[4] A: I don't believe so.

[5] Q: Have you reviewed any corporate documents  
[6] or depositions of corporate representatives of 3M?

[7] A: I don't believe so. I — with the last  
[8] question, 3M as relates to asbestos?

[9] Q: Yes, sir.

[10] A: No.

[11] Q: Have you reviewed any corporate documents  
[12] or depositions of corporate representatives of  
[13] National Gypsum?

[14] A: Corporate documents? I've been in a  
[15] trial that dealt with National Gypsum, but I don't  
[16] recall reviewing any of their corporate documents.

[17] Q: Have you reviewed any depositions of any  
[18] employee of National Gypsum, to your knowledge?

[19] A: I don't believe so.

[20] Q: Have you reviewed any corporate documents  
[21] or depositions of corporate representatives of the  
[22] U.S. Gypsum Company?

[23] A: I don't believe so.

[24] Q: Have you conducted or reviewed any  
[25] studies on the fiber release of any products

Page 83

[1] manufactured by Armstrong World Industries or  
[2] Armstrong Cork Company?

[3] A: I don't believe so.

[4] Q: Have you conducted or reviewed any  
[5] studies on the fiber release of any product  
[6] manufactured by the Ruberoid or GAF companies?

[7] A: I don't believe so.

[8] MR. HAINES: Gary, you can shorten it  
[9] to one question and I won't object to being  
[10] compound, if you want to.

[11] MR. ELLISTON: I appreciate that, but  
[12] at the time I need to examine him in the  
[13] trial I expect all these companies will not  
[14] be sitting there. Therefore, I'd rather  
[15] separate them.

[16] MR. HAINES: That's probably true.

[17] (Recess taken.)

[18] Q: (By Mr. Elliston) Sir, have you  
[19] conducted or reviewed any studies on the fiber  
[20] release of any product manufactured by CertainTeed?

[21] A: Not to my knowledge.

[22] Q: Have you conducted or reviewed any  
[23] studies on the fiber release of any product  
[24] manufactured by Riley Stoker?

[25] A: Not to my knowledge.

Page 84

[1] Q: Have you conducted or reviewed any  
[2] studies on fiber release of any product  
[3] manufactured by T&N?

[4] A: Not to my knowledge.

[5] Q: By T&N I mean Turner & Newell.

[6] A: Right.

[7] Q: Have you conducted or reviewed any  
[8] studies on the fiber release manufactured by  
[9] Flexitallic?

[10] A: Not to my knowledge.

[11] Q: Have you conducted or reviewed any  
[12] studies on the fiber release of any product  
[13] manufactured by Dana?

[14] A: Not to my knowledge.

[15] Q: Have you conducted or reviewed any  
[16] studies on the fiber release of any product  
[17] manufactured by National Gypsum or U.S. Gypsum?

[18] A: Not to my knowledge.

[19] Q: Have you ever visited a facility that  
[20] manufactured joint compound or wallboard?

[21] A: I believe I have. But ask me which  
[22] facility — it would have been in the early '70s —  
[23] I can't tell you.

[24] Q: Have you ever visited or inspected a  
[25] facility of the National Gypsum Company?

Page 85

[1] A: I don't believe so, unless they were  
[2] owned previously by another organization.

[3] Q: Have you ever visited or inspected a  
[4] facility owned by the U.S. Gypsum Company?

[5] A: Again, my answer would be the same unless  
[6] they were owned by a different name. I don't  
[7] recall going into any.

[8] Q: Have you ever visited or inspected a  
[9] facility operated by the Armstrong World Industries  
[10] Company or Armstrong Cork Company?

[11] A: I don't believe so, unless they were  
[12] owned by another company prior to that.

[13] Q: I think that company has gone by  
[14] Armstrong Cork Company or Armstrong World  
[15] Industries, Inc. since the late 1800s.

[16] A: I don't recall ever going in there.

[17] Q: Have you ever inspected or visited a  
[18] facility owned or operated by Ruberoid or GAF?

[19] A: Not to my knowledge.

[20] Q: Have you ever been to any facility owned  
[21] or operated by Flexitallic?

[22] A: Until today I never heard of Flexitallic.

[23] Q: That might eliminate a few additional  
[24] questions.

[25] Have you reviewed — I'm sorry. Have you

Page 86

Page

[1] visited or inspected a facility owned by  
[2] CertainTeed?  
[3] A: I may have. I can't remember which one.  
[4] Q: Have you visited or inspected any  
[5] facility owned or operated by Riley Stoker?  
[6] A: No, not to my knowledge.  
[7] Q: Would you agree, sir, that you cannot  
[8] testify to the state of mind, motivation or thought  
[9] processes of any representative or employee of  
[10] Armstrong World Industries or Armstrong Cork  
[11] Company?  
[12] A: Yes.  
[13] Q: In fact, sir, regardless which company I  
[14] put in the question, you can't testify to the state  
[15] of mind, motivation or thought processes of any  
[16] company representative or employee, can you?  
[17] A: Correct.  
[18] Q: Can you identify any manufacturer who was  
[19] manufacturing ceiling tile that contained asbestos  
[20] after 1985?  
[21] A: No, sir.  
[22] Q: Can you identify any company that was  
[23] manufacturing joint compound that contained  
[24] asbestos after 1985?  
[25] A: No, sir.

Page 87

Page

[1] Q: You brought some literature today  
[2] concerning friction products. Have you ever  
[3] published or gathered literature on fiber release  
[4] from floor tiles or flooring material?  
[5] A: Not to my knowledge.  
[6] Q: Have you ever published or gathered  
[7] literature on fiber release from ceiling tiles?  
[8] A: I don't believe so.  
[9] Q: Have you ever published or gathered any  
[10] literature on fiber release from gaskets?  
[11] A: I don't believe so.  
[12] Q: Have you ever published or gathered  
[13] literature on fiber release from adhesives,  
[14] sealants or coatings?  
[15] A: I don't believe so.  
[16] Q: Would you agree, sir, that gaskets,  
[17] flooring materials, adhesives, sealants and  
[18] coatings would all be classified as nonfriable  
[19] products under the EPA?  
[20] A: Again, in answer to the earlier question,  
[21] I don't know the exact definition, but I believe  
[22] that that would be the case.  
[23] Q: Have you been provided any information  
[24] that indicates that Mr. Raper ever encountered any  
[25] warning signs in any of his workplaces after June

[1] of 1972 that indicated there was asbestos being  
[2] used in that workplace?  
[3] A: Other than what might be contained in the  
[4] material that I gave, I'm not aware of any.  
[5] Q: And you're not aware of any from your  
[6] review of that material, are you?  
[7] A: No.  
[8] Q: Would you also agree, sir, that under the  
[9] OSHA regulations, that the employer was required to  
[10] have the employee have a physical examination each  
[11] year if they were being exposed to asbestos?  
[12] A: I'd have to go back to the regulation.  
[13] And I think that's correct, but I don't know the —  
[14] Q: You would agree that under OSHA, any  
[15] employee being exposed to asbestos was required to  
[16] be medically monitored after 1972 by their  
[17] employer, wouldn't you?  
[18] A: Yes, sir.  
[19] Q: You've not been given any information  
[20] that Mr. Raper was medically monitored or required  
[21] to have a physical examination each year after  
[22] 1972, have you?  
[23] A: No.  
[24] Q: In fact, sir, under OSHA, that if an  
[25] employee was being exposed to asbestos above the

[1] permissible exposure levels and engineering  
[2] controls were not feasible, they were required to  
[3] be given respiratory protection, weren't they?  
[4] A: Correct.  
[5] Q: And based on all you saw, Mr. Raper was  
[6] never required by his employer to wear respiratory  
[7] protection, was he?  
[8] A: I did not see that.  
[9] Q: Are you aware, sir, of any  
[10] epidemiological study that has looked at the  
[11] mortality or morbidity of flooring applicators or  
[12] flooring mechanics?  
[13] A: No.  
[14] Q: Are you aware of any epidemiological  
[15] study that has looked at the morbidity or mortality  
[16] of workers who are using ceiling tiles or applying  
[17] sealant material?  
[18] A: There have been studies that may have  
[19] included those, but nothing specific to that  
[20] particular job.  
[21] Q: Would you agree, sir, that the first  
[22] epidemiological study that identified a risk of  
[23] asbestos-related disease in workers working with or  
[24] around joint compound was the study in the mid  
[25] 1970s, specifically 1975, by Dr. Selikoff's group?

Page 90

[1] A: I believe that's true, but I —  
[2] Q: Would you also agree, sir, that the first  
[3] study that indicated that persons in the household  
[4] of asbestos workers might be at risk of  
[5] asbestos-related disease was a study, the  
[6] Anderson-Lillis study of 1976?  
[7] MR. HAINES: Object to form.  
[8] THE WITNESS: I believe that was the  
[9] first study.  
[10] Q: (By Mr. Elliston) Have you reviewed or  
[11] conducted any studies on fiber release from  
[12] automotive gaskets, meaning gaskets used in  
[13] automotive combustion engines?  
[14] A: I don't believe so.  
[15] Q: As I understand it, sir, you've not had  
[16] any communication with anyone concerning  
[17] Mr. Raper's case other than Plaintiff's attorney;  
[18] is that correct?  
[19] A: That's correct.  
[20] Q: In other words, you have not had any  
[21] communication with any of the co-workers, his  
[22] physicians or the families themselves; have you?  
[23] A: You mean directly talk to them?  
[24] Q: Yes.  
[25] A: No, sir.

Page 91

[1] Q: Based on the information you've been  
[2] given, are you aware, sir, whether Mr. Raper was  
[3] ever diagnosed with any non-malignant,  
[4] asbestos-related disease such as asbestosis or  
[5] asbestos-related pleural plaques prior to receiving  
[6] his cancer diagnosis?  
[7] A: I don't know of any.  
[8] Q: Sir, would you agree that it has been  
[9] your recommendation for the last quarter century  
[10] that in-place asbestos products that are in good  
[11] condition that have not been damaged should be left  
[12] alone and left in place?  
[13] A: That has been my opinion. But monitored.  
[14] Q: When NIOSH was making recommendations to  
[15] OSHA about the permissible exposure levels, those  
[16] were levels that were being recommended for all  
[17] types of asbestos-related diseases, including the  
[18] cancers, weren't they?  
[19] A: I think the 1992 really didn't address  
[20] the cancer issue to any extent. But all the rest  
[21] of them, after that point in time, were, yes, sir.  
[22] MR. HAINES: You said '92.  
[23] THE WITNESS: I mean '72. I'm sorry.  
[24] Not '92, '72.  
[25] Q: (By Mr. Elliston) I'll see if I can

Page 92

[1] clear that up for both of us.  
[2] After the 1972 criteria document, each  
[3] additional criteria documents, when there were  
[4] recommended levels of exposure given to OSHA by  
[5] NIOSH, those levels were to protect against all  
[6] asbestos-related diseases, including the cancers,  
[7] weren't they?  
[8] A: If you recall the 1976 criteria document  
[9] that I and John Dement wrote for NIOSH, it said  
[10] that the concentration we recommended, that being  
[11] the 0.1, which is the current OSHA standard, was  
[12] based upon technological feasibility and phase  
[13] contrast microscopy to reduce the risk, but we  
[14] could not guarantee it would eliminate the risk of  
[15] cancer.  
[16] So the level was not based upon the  
[17] health effect, it was based upon a technological  
[18] feasibility of measuring at that concentration.  
[19] MR. ELLISTON: Objection, nonresponsive.  
[20] Q: (By Mr. Elliston) Isn't it true, sir,  
[21] that when NIOSH made recommendations to OSHA  
[22] concerning permissible exposure levels, those  
[23] recommendations were made for all types of — all  
[24] types of asbestos-related disease, including the  
[25] cancers?

Page 93

[1] MR. HAINES: Object to form.  
[2] THE WITNESS: Well, yes, they were,  
[3] with that provision that I put on.  
[4] Q: (By Mr. Elliston) Well, you would agree,  
[5] sir, that NIOSH didn't recommend different levels  
[6] to protect against asbestosis and then a different  
[7] level to protect against cancers?  
[8] A: If that's your question, that's correct.  
[9] Q: Would you also agree that in the 1940s  
[10] and 1950s and 1960s, no doctor or scientist with  
[11] U.S. Public Health Service ever recommended that  
[12] asbestos not be used onboard government ships and  
[13] aircraft because of any potential hazard?  
[14] A: I don't know the answer to that. I don't  
[15] know if anybody did or did not, but I don't know of  
[16] anybody doing it.  
[17] Q: You've never seen any evidence that  
[18] anybody with U.S. Public Health Service ever spoke  
[19] up and said, don't use asbestos onboard Naval ships  
[20] or military aircraft, have you?  
[21] A: I don't know of any. The answer is no.  
[22] Q: Would you likewise agree, sir, that you  
[23] cannot cite any textbook that was published in the  
[24] 30's, '40s, '50s or even the '60s that advocated  
[25] banning asbestos?

Page 94

Page

[1] A: Well, I think Dr. Hueper's textbook,  
[2] 1942, certainly talked about the risk, but I don't  
[3] think he ever said anything about banning the use  
[4] of asbestos.  
[5] Q: Therefore, you would agree, sir, you  
[6] could not identify any textbook that advocated  
[7] banning asbestos in the 1930s, 1940s, 1950s or  
[8] 1960s, can you?  
[9] A: Not that I recall.  
[10] Q: Can you identify any textbook that  
[11] advocated banning asbestos in the 1970s?  
[12] A: Well, I think that — by your definition  
[13] of textbook, would you include the annals of the  
[14] New York Academy of Sciences in 1965 as a textbook?  
[15] Because you kind of skipped over the '60s.  
[16] Q: Well, let me go back to this for a  
[17] second. Go back to your question for a second.  
[18] I am specifically dealing with textbooks,  
[19] and we'll talk about the annals in just a moment.  
[20] A: Okay.  
[21] Q: Which —  
[22] A: A textbook, by your definition, is a  
[23] textbook used for training people?  
[24] Q: Correct.  
[25] A: Okay.

Page 95

Page

[1] Q: Are you aware of any textbook that  
[2] advocated banning asbestos in the 1970s?  
[3] A: Not with — not right now, no, I can't  
[4] tell you anything.  
[5] Q: Did Mount Sinai, in their — did Mount  
[6] Sinai or the New York Academy, did they advocate  
[7] banning asbestos in the 1960s or 1970s?  
[8] A: Well, in the discussion section, I think  
[9] it was Mr. Roach representing industry, said that  
[10] the only safe level that would protect all workers  
[11] was zero, which I would say would be essentially  
[12] the recommendation, not to use it, or ban it. So I  
[13] don't think he used the word ban, but he said that  
[14] was the only safe concentration.  
[15] Q: Did Dr. Selikoff himself ever publish the  
[16] opinion that asbestos should not be used in  
[17] industry in the 1960s, 1970s or 1980s?  
[18] A: I don't know that he did, no, sir.  
[19] Q: Did any member of the U.S. Public Health  
[20] Service publish the opinion in the 1950s, 1960s or  
[21] 1970s that asbestos should not be used in industry?  
[22] A: Other than the statement in the criteria  
[23] document that I alluded to before that you said was  
[24] nonresponsive, I don't think so.  
[25] Q: Did NIOSH come out and issue the opinion

[1] or recommendation that asbestos be banned from use  
[2] in industry in the 1970s?  
[3] A: I think they recommended substitution  
[4] when possible, but never an outright statement of  
[5] banned.  
[6] Q: It has been the opinion and the  
[7] recommendation of the U.S. Public Health Service  
[8] from the 1930s right up through the 1970s that you  
[9] should control the dust levels, and by controlling  
[10] the dust levels, control disease, when dealing with  
[11] asbestos, hasn't it?  
[12] A: Reduce the risk of disease, yes, sir.  
[13] Q: Sir, since you retired from NIOSH, would  
[14] you estimate that you have testified, either in  
[15] deposition or trial, approximately 50 times?  
[16] A: That's probably correct.  
[17] Q: Would you agree, sir, that at this point  
[18] in time approximately 60 to 75 percent of your  
[19] income comes from litigation?  
[20] A: I would guess that would be correct.  
[21] Q: When you went through the material for  
[22] this case, did you make any notes yourself?  
[23] A: No, sir.  
[24] Q: Would you agree, sir, that an individual  
[25] just looking at dust can't tell whether that dust  
[1] contains asbestos or not?  
[2] A: I agree with you.  
[3] Q: You have to look at the dust or the  
[4] particles under a microscope to determine whether  
[5] they're asbestos or not, don't you?  
[6] A: That's correct.  
[7] Q: Would you also agree, sir, that the first  
[8] large-scale epidemiological study about asbestos  
[9] was done by Dr. Merewether in 1930 over in England  
[10] on textile workers?  
[11] A: I certainly think that's the biggest of  
[12] the first studies done, yes, sir.  
[13] Q: And, again, Dr. Merewether was dealing  
[14] with textile workers who were working with raw  
[15] asbestos in poorly-ventilated plants rather than in  
[16] end-product users, wasn't he?  
[17] A: That's correct.  
[18] Q: And, of course, what Dr. Merewether  
[19] recommended was that you suppress the dust levels  
[20] and control the disease, wasn't it?  
[21] A: Yes, sir.  
[22] Q: And at that study Dr. Merewether did not  
[23] identify any mesotheliomas, did he?  
[24] A: Not to my knowledge.  
[25] Q: In fact, Dr. Merewether did not report

Page 98

[1] any cancers in that study, did he?  
[2] A: That's correct.  
[3] Q: Sir, I've heard you mention Dr. Hoffman  
[4] or Mr. Hofman's report before, and I want to just  
[5] ask you a few questions about that.  
[6] The Hoffman report of 1918, that was a  
[7] governmental document, wasn't it?  
[8] A: That was from the — I believe the Bureau  
[9] of Labor Statistics, by the Department of Labor.  
[10] Q: And that document referred to asbestos  
[11] workers but did not refer to end-product users, did  
[12] it?  
[13] A: I don't believe it did.  
[14] Q: So that document would take  
[15] U.S. Government's knowledge about asbestos at least  
[16] back to 1918, wouldn't it?  
[17] A: I believe so. At least the Department of  
[18] Labor, that part of the government.  
[19] Q: Now, if we go to 1935, we have  
[20] Dr. Lanza's study, which was the first large-scale  
[21] epidemiological study of the United States, wasn't  
[22] it?  
[23] A: The one when he was with Metropolitan?  
[24] Q: 1935.  
[25] A: Yes, I think so.

Page 99

[1] Q: Is that correct?  
[2] A: I said yes.  
[3] Q: Okay.  
[4] A: I think so.  
[5] Q: Dr. Lanza's 1935 study in the U.S.,  
[6] again, was dealing with textile workers who were,  
[7] for all practical purposes, working with pure  
[8] asbestos dust in factories, wasn't it?  
[9] A: That's correct.  
[10] Q: And Dr. Lanza, again, recommended that  
[11] you suppress the dust and control disease?  
[12] A: I believe that's correct.  
[13] Q: And then, in 1938, U.S. Public Health  
[14] Service, with Dr. Dreessen, does a study of  
[15] asbestos textile workers?  
[16] A: That's when the study was reported.  
[17] Q: And Dr. Dreessen did not report any  
[18] mesotheliomas, did he?  
[19] A: No, sir.  
[20] Q: Dr. Lanza did not report any  
[21] mesotheliomas?  
[22] A: Correct.  
[23] Q: And Dr. Dreessen went beyond just the  
[24] standard recommendation that you should suppress  
[25] the dust and control disease, he went a step

Page 100

[1] further and recommended a tentative threshold limit  
[2] value, didn't he?  
[3] A: It wasn't called a threshold limit value  
[4] at that time, it was just a guidance limit. I think  
[5] he called it.  
[6] Q: What Dr. Dreessen said in his 1938 study  
[7] was that if you kept the dust levels below five  
[8] million particles per cubic foot, that you would  
[9] expect almost the total disappearance of disease,  
[10] didn't he?  
[11] A: The disease asbestosis, yes, sir. He did  
[12] report some cases below that concentration, but  
[13] that's essentially what his conclusion was.  
[14] Q: And, again, this Dr. Dreessen's study was  
[15] reported on textile workers and it was reported in  
[16] a U.S. Government publication under the seal of the  
[17] U.S. Surgeon General, wasn't it?  
[18] A: Well, I don't know if it was under the  
[19] seal. I've never heard it put that way. But it  
[20] was a U.S. Government publication of the Public  
[21] Health Service.  
[22] Q: And the Surgeon General was in charge and  
[23] the head of the U.S. Public Health Services; is  
[24] that correct?  
[25] A: Yes, that's correct.

Page 101

[1] Q: Then in 1946 we have the first  
[2] large-scale epidemiological study concerning pipe  
[3] covers or people working with thermal insulation  
[4] products in the United States, don't we?  
[5] A: Are you referring to the Fleischer study?  
[6] Q: Yes, sir.  
[7] A: Yes, sir.  
[8] Q: And the Fleischer-Drinker study, again,  
[9] was a study conducted by the U.S. Navy and the  
[10] U.S. Maritime Commission, wasn't it?  
[11] A: I believe that's correct.  
[12] Q: In the Fleischer-Drinker study, did they  
[13] report any mesotheliomas?  
[14] A: No, sir.  
[15] Q: Did the Fleischer-Drinker study report  
[16] any lung cancers or malignancies of any type that  
[17] they associated with asbestos?  
[18] A: I don't believe so.  
[19] Q: In your opinion, sir, is cigarette smoke  
[20] fibrogenic?  
[21] A: Fibrogenic?  
[22] Q: Yes, sir.  
[23] A: It can cause — I'm not sure that I can  
[24] answer that question, whether it's fibrogenic or  
[25] not.

Page 102

[1] Q: Let me rephrase the question for you.  
[2] Would you agree, sir, that cigarette smoke causes a  
[3] fibrotic reaction in the lungs?  
[4] A: It can.  
[5] Q: Would you agree, sir, that interstitial  
[6] fibrosis progresses more rapidly in a smoker than a  
[7] nonsmoker?  
[8] MR. HAINES: Object to form.  
[9] THE WITNESS: I believe that would be  
[10] true.  
[11] Q: (By Mr. Elliston) In fact, the  
[12] epidemiological studies by Dr. Selikoff, published  
[13] in the 1960s and 1970s, indicate that asbestosis  
[14] tends to progress more rapidly and become more  
[15] severe in smokers than nonsmokers. doesn't it?  
[16] A: I believe that's correct.  
[17] Q: Would you also agree, sir, that the risk  
[18] of GI-tract cancer in asbestos workers has not been  
[19] shown to be any greater than the general population  
[20] if they are non-smokers?  
[21] A: I can't answer that question.  
[22] Q: You would agree, sir, that at least for  
[23] laryngeal cancers, there has been no showing of an  
[24] excess risk of laryngeal cancer among asbestos  
[25] workers unless they are a smoker. wouldn't you?

Page 103

[1] A: I believe that's correct.  
[2] Q: Would you also agree, sir, that the  
[3] average latency period for mesothelioma is 35  
[4] years?  
[5] A: Somewhere in that neighborhood.  
[6] Q: Would you also agree, sir, that the  
[7] average latency period for lung cancer, if it is  
[8] related to asbestos, is in the range of 20 to 25  
[9] years?  
[10] A: I would think that would be correct. In  
[11] both of those, you're saying, average?  
[12] Q: Yes, sir, I am.  
[13] A: Okay. I agree with you.  
[14] Q: What is your opinion, sir, for the  
[15] average latency period for asbestosis?  
[16] A: That depends upon the dosage.  
[17] Q: Would you agree, sir, that the more  
[18] severe the dose or the exposure, the more rapid or  
[19] shorter the latency period?  
[20] A: The higher the exposure or the  
[21] concentration to the individual, the shorter the  
[22] latency period.  
[23] Q: Would you agree, sir, that throughout the  
[24] research and development of knowledge about  
[25] asbestos and its potential relationship or

Page

[1] association with lung cancer, there has been a  
[2] debate whether interstitial fibrosis or asbestosis  
[3] is necessary before there is an increased risk of  
[4] lung cancer in an asbestos-exposed individual?  
[5] A: That is correct.  
[6] Q: Would you also agree, sir, that if we  
[7] followed Dr. Selikoff's epidemiological research  
[8] back to 1968, when he first divided his workers  
[9] between smokers and nonsmokers, that all the way up  
[10] until 1979 Dr. Selikoff basically reported that  
[11] nonsmoking asbestos workers did not have an  
[12] increased risk of lung cancer above the general  
[13] population?  
[14] A: Give me the dates again. I'm not —  
[15] Q: Okay.  
[16] A: You're saying '79.  
[17] Q: I apologize. I'm getting too  
[18] shorthanded, trying to shorthand this.  
[19] Would you agree, sir, that up until 1979,  
[20] throughout all of Dr. Selikoff's publications on  
[21] his research, Dr. Selikoff indicated that a  
[22] nonsmoking asbestos worker did not have an  
[23] increased risk of lung cancer above the general  
[24] population?  
[25] A: Could you just tell me what publication

Page

[1] in '79 you're referring to? Because I'm having —  
[2] that Selikoff stated that in? I'm trying to figure  
[3] out when —  
[4] MR. HAINES: He's asking you about  
[5] all the publications prior to '79. Whether  
[6] he said that or not —  
[7] Q: (By Mr. Elliston) Let me approach it  
[8] this way, Dr. Lemen. You would agree that in 1964  
[9] and '65 Dr. Selikoff did not divide those  
[10] insulation workers between smokers and nonsmokers,  
[11] did he?  
[12] A: Well, he wrote a paper — before '65?  
[13] Q: Yes. Stay with me for just a second.  
[14] A: Correct.  
[15] Q: I know you're trying to read, and I'm  
[16] going to try to break it out for us so we can get  
[17] there.  
[18] Would you agree, sir, that in his — at  
[19] the symposium and in the annals that were published  
[20] after the symposium, that Dr. Selikoff did not  
[21] distinguish between smokers and nonsmokers in his  
[22] cohort of insulators?  
[23] A: I believe that's correct.  
[24] Q: In 1968 Dr. Selikoff did divide the  
[25] workers between smokers and nonsmokers and

Page 106

[1] published the opinion that the nonsmokers did not  
[2] have an excess risk of lung cancer above the  
[3] general population?

[4] A: I believe that was his finding.

[5] Q: In 1972 he went to France, to an IARC  
[6] meeting, and again reported that nonsmokers  
[7] basically did not have an increased risk of lung  
[8] cancer over the general population, even though  
[9] they had been exposed to asbestos, didn't he?

[10] A: I believe that — you're talking about  
[11] his publication and the biological effects of —  
[12] yes, sir.

[13] Q: Then in 1976 he again presented his data  
[14] at the New York Academy of Science meeting and  
[15] again indicated that nonsmoking asbestos workers  
[16] did not have an increased risk of lung cancer above  
[17] the general population, didn't he?

[18] A: I'd have to go back to his paper, but  
[19] that's generally my recollection.

[20] Q: In any event, in 1979 Dr. Selikoff did  
[21] publish a paper indicating that, in his opinion,  
[22] that there was an increased risk of lung cancer  
[23] among nonsmoking asbestos workers that could be  
[24] somewhere between 1 and 9 and, therefore, they  
[25] selected 5 and published that as the increased risk

Page 107

[1] for a nonsmoking asbestos worker; isn't that true?

[2] A: What was the name of that paper? Can you  
[3] tell me which one?

[4] Q: I can't give you the title of the paper,  
[5] but it's my recollection, sir, that it was  
[6] published in the annals that were published that  
[7] year, the 1979 annals. I'd have to go back and  
[8] look. But the figure of 5 is certainly what he  
[9] reported. But I'm not sure of the exact era that  
[10] that was reported.

[11] Would you agree, sir, that in the paper  
[12] where they reported the five times increased risk  
[13] for nonsmoking asbestos workers, they also  
[14] indicated that the risk, in actuality, could be  
[15] anywhere between 1 and 9 because there were so few  
[16] nonsmoking asbestos workers who had developed lung  
[17] cancer?

[18] A: I think that's true.

[19] Q: In your opinion, sir, is there any safe  
[20] level or is there any known safe level to any  
[21] carcinogen?

[22] A: To any carcinogen?

[23] Q: Yes, sir.

[24] A: Well, we certainly put recommendations in  
[25] our criteria documents, RELs, recommended exposure

Page 108

[1] limits. And there possibly are safe levels, but I  
[2] can't quantify them for you.

[3] Q: Fair enough. Let me rephrase my question  
[4] for you.

[5] Would you agree, sir, that medical  
[6] science today cannot identify a safe level for any  
[7] carcinogen?

[8] A: For all individuals I believe that's  
[9] true. Because of the — there are many factors  
[10] that go into an individual's susceptibility, et  
[11] cetera, so I believe I would have to answer your  
[12] question yes.

[13] Q: In using that criteria, there is no known  
[14] safe level to automobile exhaust that we encounter  
[15] every day, is there?

[16] A: Not for all individuals, that's correct.

[17] Q: You would also agree, sir, there's no  
[18] safe level to — of exposure to cigarette smoke,  
[19] whether direct or indirect, isn't that true?

[20] A: Yes.

[21] Q: Sir, isn't it true that whether dust is  
[22] actually visible to the individual depends on a lot  
[23] of things, including the light in the area, how  
[24] large the particles are and what type of particles  
[25] they are, things of that nature?

Page 109

[1] A: I would agree with that.

[2] Q: Would you also agree, sir, that the  
[3] exposure that an individual receives from dust will  
[4] depend a lot on the wind or the ventilation in that  
[5] area?

[6] A: Those all have effects, yes, sir.

[7] Q: And would you agree, sir, as to whether  
[8] someone truly has an exposure above the threshold  
[9] level or permissible exposure level will depend not  
[10] just on how much dust they see but, in addition to  
[11] how long they're in the area, how close they are to  
[12] the operation, ventilation, things of that nature?

[13] A: I would agree.

[14] Q: Sir, have you published any opinions or  
[15] criticisms of the filter, the fit, the marketing,  
[16] the design or the manufacture of any type of  
[17] respiratory protective device or mask?

[18] A: I have not personally published. I have  
[19] worked on respirator test programs and so forth in  
[20] NIOSH recommendations, but they are not my  
[21] publications, they're NIOSH publications.

[22] Q: Have you published any opinions or  
[23] criticisms of any specific brand or type of  
[24] respirator or mask yourself?

[25] A: Again, not personally, no, sir.

Page 110

[1] Q: Do you claim to be an expert in the  
[2] manufacture, design or marketing of respiratory  
[3] protective devices?  
[4] A: No, sir.  
[5] MR. ELLISTON: Why don't we take a  
[6] quick break.  
[7] (Recess taken.)  
[8] Q: (By Mr. Elliston) Sir, what is your best  
[9] estimate of your total income in 1998 from your  
[10] work testifying and consulting in the asbestos  
[11] litigation?  
[12] A: Just as pertains to asbestos?  
[13] Q: Yes, sir.  
[14] A: I'd have to go to my accountant, but I  
[15] think that I — after expenses and paying taxes  
[16] and — is that — what are you talking about, gross  
[17] or —  
[18] Q: Yes, sir. Let's — I don't want to get  
[19] into all your expenses. What was your gross  
[20] income, your best estimate, from consulting and  
[21] testifying in asbestos litigation in 1998?  
[22] A: A little over \$100,000.  
[23] Q: Sir, I noticed in your designation there  
[24] was a mention of smoking. Would you agree that  
[25] smoking causes 30 to 35 percent of all cancer in

Page 111

[1] America, cancer deaths in America?  
[2] A: I think it's the biggest cause of cancer  
[3] deaths in the United States. I don't want to put a  
[4] percentage on it because I'm not sure.  
[5] Q: Are you aware, sir, whether the  
[6] U.S. Surgeon General has estimated that smoking  
[7] causes over 30 percent of all cancer deaths in  
[8] America?  
[9] A: I agree with that. I'm just not wanting  
[10] to put a finite number. But I certainly think that  
[11] smoking is the greatest cause of lung cancer in the  
[12] world, probably.  
[13] Q: Okay. You've answered a little  
[14] differently than I asked. So, in fairness to you,  
[15] I'll divide it up. Would you agree that smoking  
[16] has been shown to be a cause of 87 percent or more  
[17] of all lung cancer deaths?  
[18] A: I would agree with that.  
[19] Q: Would you agree that smoking has been  
[20] shown to be a cause of 30 percent or more of all  
[21] cancer deaths in America?  
[22] A: Again, I can't answer that exactly, but I  
[23] think that's somewhere in the neighborhood. I'd  
[24] have to go back to the Surgeon General's report and  
[25] do that.

Page

[1] Q: I'm sorry. Would you agree, sir, that  
[2] the U.S. Surgeon General reports that tobacco smoke  
[3] contains 43 different carcinogens?  
[4] A: Somewhere in that neighborhood. I'd have  
[5] to go back and look at the Surgeon General's  
[6] report, which I have a copy of. But it contains  
[7] multiple carcinogens. And if 43 is the number,  
[8] I'll take your word for it.  
[9] Q: Would you agree, sir, that the  
[10] U.S. Public Health Service recommended warnings on  
[11] tobacco products in the mid '60s?  
[12] A: I believe that's correct.  
[13] Q: Have you ever drafted or prepared a  
[14] warning or instruction or label for any type of  
[15] product that was actually placed in the stream of  
[16] customers?  
[17] A: When I was director of the Division of  
[18] Standards Development and Technology Transfer. And  
[19] when I co-wrote the criteria document that John  
[20] Dement and I did in 1976, we had — well, we didn't  
[21] include it there, but I worked on the 1972  
[22] recommendation. And then all the criteria  
[23] documents under my supervision that were put out  
[24] between 1981 and of 1987 that contained warning  
[25] labels, yes, I had a hand in writing those.

Page

[1] Q: Let me divide this up for us.  
[2] Have you, as an individual and private  
[3] citizen, ever drafted or prepared a warning  
[4] instruction or label for any type of product that  
[5] was placed in the stream of customers?  
[6] A: No.  
[7] Q: Even while you were at NIOSH, did NIOSH  
[8] ever recommend any instructions or labels for any  
[9] individual products?  
[10] A: You mean like, for example, Armstrong  
[11] ceiling tile? Would that be an example of a  
[12] specific product?  
[13] Q: Yes, sir, it would.  
[14] A: Ours were generic recommendations, so the  
[15] answer would be no.  
[16] Q: Did NIOSH — I understand NIOSH  
[17] recommended warnings be placed on certain types of  
[18] products; is that correct?  
[19] A: That's correct.  
[20] Q: Did NIOSH go further than that and  
[21] recommend labeling or instructions for various  
[22] products?  
[23] A: They gave generic label instructions in  
[24] their criteria documents. I don't think we, when I  
[25] was at NIOSH, we ever made a specific label for a

[1] specific product, if that's what you're asking.

[2] **MR. ELLISTON:** I'll pass the witness.

[3] Thank you, sir.

[4] **MS. SIENI:** No questions.

[5] **CROSS-EXAMINATION**

[6] **BY MR. BAHR:**

[7] **Q:** Doctor, my name is Kevin Bahr. I

[8] represent Kelly Moore.

[9] Based on your review of the materials  
[10] furnished to you by the plaintiffs' attorneys in  
[11] this case, are you aware of the nature and  
[12] circumstances surrounding plaintiffs' alleged  
[13] exposure to joint compounds?

[14] **A:** Other than the material that I was given?

[15] **Q:** Correct.

[16] **A:** No.

[17] **Q:** Can you tell us what your awareness is  
[18] regarding plaintiff's exposure to joint compounds  
[19] based on what you have reviewed?

[20] **A:** Just that he was exposed, but I don't  
[21] know concentrations or anything of that nature.

[22] **Q:** Have you reviewed any materials or  
[23] documents or depositions of corporate  
[24] representatives concerning anything related to  
[25] Kelly Moore?

[1] **A:** Not to my knowledge.

[2] **Q:** You personally haven't conducted or  
[3] reviewed any industrial hygiene studies regarding  
[4] any fiber release issues concerning products  
[5] manufactured by Kelly Moore?

[6] **A:** No.

[7] **MR. BAHR:** Those are all my  
[8] questions. Thank you.

[9] **MR. HAINES:** Did you have some  
[10] questions?

[11] **MR. HARTON:** Well, actually, what  
[12] I've done, just so you'll know, is I've  
[13] sent the notebook down to be copied. If I  
[14] can get the notebook back up, that way I  
[15] will have a copy, I can just use that at  
[16] trial. And that's going to make it a lot  
[17] easier than me running back through those  
[18] articles, if that's all right. And that's  
[19] what I've done. Therefore, about the only  
[20] thing I've got is I've asked people to  
[21] make — find a copy of the Brachmann  
[22] article. Remember that? And if you want a  
[23] copy of this, I'll make it for you. But I  
[24] think earlier we said — believed it to be  
[25] a manufacturing facility. I think the

[1] first paragraph shows that, yeah, it was a  
[2] brake manufacturing plant as opposed to end  
[3] users. That's the 19 —

[4] **THE WITNESS:** Yeah, that's consistent  
[5] with what I remember. I would like to have  
[6] a copy because — I'm sure I've got one,  
[7] but it would be easier if I could — since  
[8] I've given you copies.

[9] **MR. HARTON:** And I think that's  
[10] all — yeah, yeah. I mean, those are all  
[11] the questions I have. I don't know if  
[12] anyone has anything else.

[13] **MR. HAINES:** I've just got a couple  
[14] of follow-ups if you all are all done.

[15] **DIRECT EXAMINATION**

[16] **BY MR. HAINES:**

[17] **Q:** Dr. Lemen, I want to clear up a couple of  
[18] points, make sure we're clear on. Earlier today we  
[19] were talking about the criteria document in 1972  
[20] and in '76, and you were attempting to explain one  
[21] of your answers about technological feasibility and  
[22] the levels. Please explain to me what happened in  
[23] 1976 with regard to technological feasibility and  
[24] the standard that was recommended in that criteria  
[25] document.

[1] **A:** The standard that was recommended in the  
[2] 1976 criteria document was based upon the  
[3] statistical abilities of the NIOSH analytical  
[4] method for counting fibers in an environment — in  
[5] an environment containing asbestos and the ability  
[6] to statistically have a reliable concentration that  
[7] you could rely upon. And the lowest concentration  
[8] at that time that we could determine was 0.1  
[9] fibers. And we stated that even at that  
[10] concentration there may be disease, which we know  
[11] now from doing risk assessment we project that  
[12] there is a risk of developing disease at or below  
[13] the concentration.

[14] **Q:** In 1972 or in 1976, was it ever thought,  
[15] by the NIOSH or by yourself in your capacity  
[16] working for NIOSH, that that level of .1 would  
[17] entirely prevent cancer from arising from asbestos  
[18] exposure?

[19] **MR. ELLISTON:** Objection, form.

[20] **THE WITNESS:** Well, the .1 didn't  
[21] come into existence until 1976, and it  
[22] wasn't after that period of time, that's  
[23] true.

[24] **Q:** (By Mr. Haines) I'm sorry. It wasn't  
[25] after what time?

Page 118

Page

[1] A: I was first recommended by NIOSH in  
[2] 1976, and subsequent to that and at that time it  
[3] was never stated that it would completely reduce  
[4] the risk, but it would substantially lower the  
[5] risk, in our opinion.  
[6] Q: Right. With regard to some of these  
[7] articles that discuss the manufacturing of brake  
[8] parts, such as this Brachmann article in 1940 which  
[9] discusses grinders and drillers of brake bands, can  
[10] you discuss for us why that would be relevant or  
[11] applicable to end users? What is the significance  
[12] of an article like this in the context of an end  
[13] user brake mechanic?  
[14] MR. ELLISTON: Object, form.  
[15] THE WITNESS: I believe that it shows  
[16] that when working with the brake lining,  
[17] drilling holes in it or grinding it, that  
[18] there could be exposure. So that's  
[19] strictly applicable if somebody were  
[20] grinding or drilling as an end-product user  
[21] of the material.  
[22] MR. HAINES: That's all the questions  
[23] I have for you. Thank you.  
[24] MR. HARTON: One. I'm following up  
[25] on that.

[1] A: There may be some, but I'm not aware of  
[2] them.  
[3] MR. ELLISTON: That's all I have.  
[4] Thank you.  
[5] (Deposition concluded at 11:50 a.m.)  
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Page 119

Page

[1] **REXCROSS-EXAMINATION**  
[2] **BY MR. HARTON:**  
[3] Q: Do you know, based on your review of the  
[4] Raper testimony, if he ever either ground or  
[5] drilled any brake linings?  
[6] A: I don't know.  
[7] MR. HARTON: Okay, thanks.  
[8] MR. FALK: I just have one follow-up  
[9] also.  
[10] **REXCROSS-EXAMINATION**  
[11] **BY MR. FALK:**  
[12] Q: Are you aware of any studies or  
[13] industrial hygiene surveys concerning exposure  
[14] levels while working on aircraft brakes?  
[15] A: I haven't seen any.  
[16] Q: Do you know if the brakes on the aircraft  
[17] that Mr. Raper worked on even contained asbestos?  
[18] A: No, I don't know that.  
[19] MR. FALK: Thank you.  
[20] MR. ELLISTON: One last question.  
[21] **REXCROSS-EXAMINATION**  
[22] **BY MR. ELLISTON:**  
[23] Q: Sir, are you aware of any fiber release  
[24] studies or testing that has been done related to  
[25] friction products used on cranes, overhead cranes?

| INDEX TO EXAMINATIONS                    |      |
|------------------------------------------|------|
| Examination                              | Page |
| [5] Cross-Examination by Mr. Harton      | 5    |
| [6] Cross-Examination by Mr. Falk        | 50   |
| [7] Cross-Examination by Mr. Gustafson   | 67   |
| [8] Cross-Examination by Mr. Johnson     | 70   |
| [9] Cross-Examination by Mr. Elliston    | 74   |
| [10] Cross-Examination by Mr. Bahr       | 114  |
| [11] Direct Examination by Mr. Haines    | 116  |
| [12] Recross-Examination by Mr. Harton   | 119  |
| [13] Recross-Examination by Mr. Falk     | 119  |
| [14] Recross-Examination by Mr. Elliston | 120  |
| [15]                                     |      |
| [16]                                     |      |
| [17]                                     |      |
| [18]                                     |      |
| [19]                                     |      |
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| [21]                                     |      |
| [22]                                     |      |
| [23]                                     |      |
| [24]                                     |      |
| [25]                                     |      |

Page 122

Page 123

INDEX TO EXHIBITS

Defendant's

| Exhibit | Description                                                    | Page |
|---------|----------------------------------------------------------------|------|
| 1       | Notice of Taking Deposition                                    | 5    |
| 2       | CV                                                             | 7    |
| 3       | Medical File on Kenneth Raper                                  | 8    |
| 4       | Time Line                                                      | 15   |
| 5       | Medical Reports and Depositions of<br>Mr. Raper and Co-Workers | 15   |

(Original Exhibits 1 - 3 and 5 and photocopies  
of Exhibit 4 have been attached to the original  
transcript.

STATE OF GEORGIA:  
COUNTY OF FULTON:

I hereby certify that the foregoing transcript  
was reported, as stated in the caption, and the  
questions and answers thereto were reduced to  
typewriting under my direction; that the foregoing  
pages 1-123 represent a true, complete, and correct  
transcript of the evidence given upon said hearing,  
and I further certify that I am not of kin or  
counsel to the parties in the case; am not in the  
employ of counsel for any of said parties; nor am I  
in anywise interested in the result of said case.  
Disclosure Pursuant to O.C.G.A. 9-11-28(d): The  
party taking this deposition will receive the  
original and one copy based on our standard and  
customary per page charges. Copies to other  
parties will be furnished based on our standard and  
customary per page charges. Incidental direct  
expenses of production may be added to either party  
where applicable. Our customary appearance fee  
will be charged to the party taking this  
deposition.

This, the 18th day of March, 1999.

Diane M. Bachus, RPR, CCR #B-2089  
My Commission Expires on the  
16th Day of August, 2002

Page 1

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[1] IN THE COUNTY COURT  
[2] AT LAW NO. 3  
[3] DALLAS COUNTY, TEXAS  
[4] KENNETH DALE RAPER and )  
[5] MARGARITE ELLEN RAPER, )  
[6] Plaintiffs, )  
[7] vs. )  
[8] ) CAUSE NO. 98-8060-C  
[9] OWENS-CORNING FIBERGLASS )  
[10] CORPORATION, et al., )  
[11] Defendants. )  
[12] DEPOSITION OF  
[13] RICHARD A. LEMEN, Ph.D.  
[14] March 18, 1999  
[15] 9:03 a.m.  
[16] 4000 SunTrust Plaza  
[17] 303 Peachtree Street, N.E.  
[18] Atlanta, Georgia  
[19] Diane Bachus, B-2089  
[20] BROWN REPORTING, INC.  
[21] 1740 PEACHTREE STREET, N.W.  
[22] ATLANTA, GEORGIA 30309  
[23] (404) 876-8979

[1] APPEARANCES OF COUNSEL  
[2] On behalf of the Plaintiff:  
[3] PATRICK HAINES, Esq.  
[4] Baron & Budd  
[5] The Centrum, Suite 1100  
[6] 3102 Oak Lawn Avenue  
[7] Dallas, Texas 75219-4281  
[8] On behalf of the Defendant:  
[9] Allied Signal, as Successor in Interest to the  
[10] Bendix Corporation:  
[11] ERIC K. FALK, Esq.  
[12] Davies, McFarland & Carroll, P.C.  
[13] The Tenth Floor, One Gateway Center  
[14] Pittsburgh, Pennsylvania 15222-1416  
[15] On behalf of the Defendant  
[16] Daimler-Chrysler Corporation:  
[17] OLLIE M. HARTON, Esq.  
[18] Hawkins & Parnell  
[19] 4000 SunTrust Plaza  
[20] 303 Peachtree Street, N.E.  
[21] Atlanta, Georgia 30303-3243  
[22] On behalf of the Defendant  
[23] Pittsburgh Corning:  
[24] IVAN A. GUSTAFSON  
[25] Blasingame, Burch, Garrard,  
[26] Bryant & Ashley, P.C.  
[27] 440 College Avenue North  
[28] P.O. Box 832  
[29] Athens, Georgia 30603

Page 3

Page 4

[1] APPEARANCES OF COUNSEL, CONT.

[2]  
[3] On behalf of the Defendant  
[4] Kelly Moore:  
[5] KEVIN J. BAHR, Esq.  
Hawkins & Parnell  
[6] 4000 SunTrust Plaza  
303 Peachtree Street, N.E.  
[7] Atlanta, Georgia 30303-3243  
[8] On behalf of the Defendant  
[9] GEORGIA PACIFIC:  
[10] JONATHAN W. JOHNSON, Esq.  
Nelson, Mullins, Riley & Scarborough, L.L.P.  
[11] First Union Plaza, Suite 1400  
999 Peachtree Street, N.E.  
[12] Atlanta, Georgia 30309  
[13] On behalf of the Defendant  
NARCO:  
[14] C. DENNIS BARROW, JR.  
Vinson & Elkins, L.L.P.  
2300 First City Tower, 1001 Fannin  
[15] Houston, Texas 77002-6760  
[16] On behalf of the Defendant  
[17] Pneumo Abex Corporation:  
[18] FRANCESCA M. SIENI, Esq.  
Smith, Abbot, L.L.P.  
[19] 100 Maiden Lane  
New York, New York 10038  
[20]  
[21]  
[22]  
[23]  
[24]  
[25]

[1] APPEARANCES OF COUNSEL, CONT.

[2]  
[3] On behalf of the Defendant  
[4] Armstrong World Industries, Inc.; Asbestos  
Claims Management Corporation, f/k/a National  
[5] Gypsum Company; U.S. Gypsum Company; GAF  
Corporation; Dana Corporation; Quigley  
[6] Company, Inc.; Flexitallic, Inc.;  
the Synkoloid Company:  
[7] GARY ELLISTON, Esq.  
DeHay & Elliston, L.L.P.  
NationsBank Plaza, Suite 3500  
[8] 901 Main Street  
Dallas, Texas 75202  
[9]  
[10]  
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Page 5

[1] (Defendant's Exhibit 1 was marked for  
[2] identification.)  
[3] RICHARD A. LEMEN, Ph.D.,  
[4] having been first duly sworn, was examined and  
[5] testified as follows:

[6] **CROSS-EXAMINATION**  
[7] **BY MR. HARTON:**

[8] Q: Dr. Lemen, I'm Ollie Harton. I'm going  
[9] to ask you some questions today. But before we get  
[10] farther, I want to say a few things.

[11] MR. HARTON: This is a deposition  
[12] being taken pursuant to agreement of  
[13] counsel. All objections except as to the  
[14] form of the question and responsiveness of  
[15] the answer will be reserved until the time  
[16] of trial. This deposition is being taken  
[17] pursuant to the Texas Rules of Civil  
[18] Procedure and can be used for all purposes  
[19] permitted thereunder.

[20] Dr. Lemen, I don't know what you want  
[21] to do about reading and signing, but the  
[22] trial starts sometime next week.

[23] MR. HAINES: I guess we'll go ahead  
[24] and waive signature.

[25] MR. HARTON: If that's all right,

Page 6

Pa

[1] waive signature. If you want to read it,  
[2] it's going to make things difficult.  
[3] Potentially you may testify at trial. But  
[4] if you want to waive —  
[5] **MR. HAINES:** Given the time frame, it  
[6] will be better to waive.  
[7] **Q:** (By Mr. Harton) What I'd like to do,  
[8] first of all, is show you what is one of the  
[9] amended notices of deposition, which is Exhibit 1.  
[10] and ask you if you've seen that before, sir.  
[11] **A:** No.  
[12] **Q:** If we could, let me run through what I  
[13] call the attachments at the back. And I know  
[14] you've brought a number of documents with you, and  
[15] we'll see what they are.  
[16] But you brought, first of all, I think, a  
[17] CV. You have one. Is this a — obviously, this  
[18] is a CV of yours. Do you know when this — oh,  
[19] it's December '98? Is that the right vintage?  
[20] **A:** Right.  
[21] **Q:** This is newer than the ones I've got.  
[22] **A:** Probably.  
[23] **Q:** What additions do you have on this that  
[24] weren't on the earlier one?  
[25] **A:** Possibly some publications and — very

[1] information on Mr. Raper?  
[2] **A:** I'll give you everything that I've been  
[3] provided on Mr. Raper is in this packet right here.  
[4] And there is — there are two things on the  
[5] medical.  
[6] **Q:** Okay. If it's all right, collectively  
[7] we'll mark this as Exhibit 3.  
[8] **A:** Yes.  
[9] (Defendant's Exhibit 3 was marked for  
[10] identification.)  
[11] **Q:** (By Mr. Harton) It's a cover letter to  
[12] you, obviously. So everyone knows, the report by  
[13] Dr. Robb — well, actually, two, one dated  
[14] 11/24/98, another 2/18/98. What I will call the  
[15] work history sheets that Baron & Budd prepares on a  
[16] regular basis for their clients. And this is just  
[17] job sites, products information. And Volume —  
[18] **A:** The rest are all Mr. Raper's two  
[19] depositions and co-worker depositions.  
[20] **Q:** Those are I and II of Raper. Co-worker  
[21] depositions of Mr. Ivie, Washington and Bridges and  
[22] Lewis.  
[23] Have you been provided any other  
[24] information on Mr. Raper?  
[25] **A:** No, that's it.

Page 7

Pa

[1] few additions. It's just that when my computer  
[2] prints it out, it prints out a new date on it. So  
[3] it doesn't necessarily mean that it's changed, but  
[4] I think that I probably added a chairperson of  
[5] Science & Technology Advisory Committee and the  
[6] Carpenters Health & Safety Fund, and I think I may  
[7] have added a couple of publications.  
[8] I think — I don't know which version you  
[9] have.  
[10] **Q:** Mine's August.  
[11] **A:** But I think probably the last three or  
[12] four publications. But that's the most current one  
[13] I have.  
[14] **Q:** All right. Can we mark this, take this  
[15] as an exhibit?  
[16] **A:** Yes, you can have that.  
[17] **Q:** Might as well mark that while we're at it  
[18] and we can look through there.  
[19] **A:** Is there anybody by phone?  
[20] **Q:** No, not that I'm aware of.  
[21] (Defendant's Exhibit 2 was marked for  
[22] identification.)  
[23] **Q:** (By Mr. Harton) Second, the entire  
[24] medical file on Kenneth Dale Raper.  
[25] Have you been provided any medical

[1] **Q:** No other medical records?  
[2] **A:** No, sir.  
[3] **Q:** No chest X-rays?  
[4] **A:** No.  
[5] **Q:** Do you have — some people do, some  
[6] people don't. We've requested — if you have a  
[7] list of the cases where you've testified in since  
[8] 1989, do you have any summary of —  
[9] **A:** I didn't bring anything, no, sir.  
[10] **Q:** Do you have anything like that that would  
[11] just simply indicate that either the deposition —  
[12] **A:** I have put together a complete list.  
[13] **Q:** How about this way. Last time I know I  
[14] talked — I think it was in August of last year, I  
[15] think. Where have you testified in trial since  
[16] August of 1998?  
[17] **A:** Well, last year, calendar year, I didn't  
[18] look it up, I've testified five times in trial.  
[19] And I've given, I think, 16 depositions in the last  
[20] year. Most of the trials were — that I testified  
[21] in were fact witness as well as state-of-the-art,  
[22] principally dealing — a lot of them dealing with  
[23] Pittsburgh Corning. And this year I've testified  
[24] probably in about six trials since January, or  
[25] somewhere in that neighborhood, both as a

Page 10

[1] state-of-the-art and fact witness. The latest  
[2] trial that I testified in was the paper mill trial  
[3] in Louisiana as a rebuttal witness, not as a — I  
[4] was brought in as rebuttal for that trial.

[5] And, also, last week I testified in a  
[6] Pittsburgh Corning trial in Austin, Texas. And do  
[7] you want me to keep going?

[8] Q: No. Let me ask you some questions that  
[9] might help narrow at least my focus. For the years  
[10] '98 and '99, have you testified in a case where you  
[11] were asked opinions regarding brakes or brake  
[12] linings?

[13] A: The paper mill case.

[14] Q: Other than the paper mill case, is that  
[15] the only trial in '98, '99?

[16] A: I think that's the only trial that I  
[17] testified in that dealt with brakes.

[18] MR. HAINES: Just to be clear, it was  
[19] not brakes specifically but the Borg-Warner  
[20] case, which was the clutch facing case. It  
[21] was technically not a brake case but pretty  
[22] close. And that was in early '98.

[23] Q: (By Mr. Harton) Okay. Other depositions  
[24] that you've given in brake lining cases in '98 or  
[25] '99?

Page 11

[1] A: I think those pretty much cover it, to  
[2] the best of my knowledge.

[3] Q: Did you give both depositions and trial  
[4] testimony —

[5] A: Yes.

[6] Q: — in both —

[7] A: Yes.

[8] Q: — of the Borg-Warner case and in the  
[9] Boglusa case?

[10] MR. HAINES: I don't think you were  
[11] deposed in Borg-Warner.

[12] THE WITNESS: I don't think I was  
[13] either, but I spent about six days in this  
[14] room in the paper mill, as you remember.

[15] Q: (By Mr. Harton) Luckily, I don't.

[16] A: You popped your head in a few times, I  
[17] think.

[18] Q: Do you have any — going down the list of  
[19] things to produce, any charts, exhibits or  
[20] photographs that you've considered in connection  
[21] with this case? That would be No. 7.

[22] A: Well, usually when I testify I bring  
[23] along this book that I've used in most every case  
[24] for state-of-the-art, which is — does have  
[25] exhibits in it. It has my time line. I brought an

Page 12

[1] extra copy of the time line, which is the principal  
[2] thing that I rely upon in state-of-the-art. But  
[3] you can have those copies.

[4] MR. HARTON: Let me go off the record  
[5] for a minute.

[6] (Discussion off the record.)

[7] Q: (By Mr. Harton) What I'm going to mark  
[8] as the next exhibit, as opposed to your large  
[9] notebook that you bring — and I understand that  
[10] should we want a copy of the entire notebook you  
[11] can make that for us?

[12] A: Yes.

[13] Q: But as the next exhibit or as a portion  
[14] of it I'm just going to put your time line in, if  
[15] that's all right.

[16] A: And that you can keep.

[17] Q: No. 8, any other objects or evidence that  
[18] you consider —

[19] A: I pulled out of my files specific  
[20] references dealing with brakes, and that is not  
[21] included in this notebook.

[22] Q: Okay.

[23] A: There's a MedLine search in there,  
[24] there's a NIOSH search and a selected number of  
[25] articles that I pulled.

Page 13

[1] Q: Are these articles included in your time  
[2] line, do you know?

[3] A: Some are and some aren't.

[4] Q: We should mark this and get copies of  
[5] that.

[6] A: Okay. If I could, I'd like to make the  
[7] copies of that. I mean, I can do that real  
[8] quickly, but I can have them to you tomorrow,  
[9] probably. But you can mark it. I mean —

[10] Q: That's fine. Other than these articles  
[11] and what you've produced as your — in response to  
[12] No. 7, your large notebook, I will call it, that  
[13] you're bringing with you to trial, is there any  
[14] other information that you have considered in  
[15] connection with this case, the Raper case?

[16] A: No.

[17] Q: No. 9 is asking for standards,  
[18] regulations, books, treatises or other supporting  
[19] written or computerized data that you've relied  
[20] upon in connection with the testimony that you're  
[21] going to give in this case.

[22] MR. HAINES: Let me just interpose an  
[23] objection as to the breadth of that  
[24] request. Obviously, Dr. Lemen has lots of  
[25] learning treatises, which he can tell you

Page 14

[1] about. If you don't have a copy, I'm sure  
[2] we can find a copy if he has one. But I do  
[3] object to the overbreadth of the request.  
[4] THE WITNESS: I would say my  
[5] knowledge on asbestos comes from a lot more  
[6] material than what I've produced here  
[7] today. And so to answer that question I  
[8] would say there are many books I've read  
[9] and other things. But to bring those would  
[10] necessitate bringing my entire library.  
[11] SO —  
[12] Q: (By Mr. Harton) No. 10, all notes,  
[13] documents, records, photographs, letters or other  
[14] written material of any kind that's been provided  
[15] to you by anyone with regard to this case. Is  
[16] there anything else?  
[17] A: No.  
[18] Q: Billing records.  
[19] A: I haven't made any billings on this case  
[20] to this point in time.  
[21] Q: How much time have you spent on this case  
[22] so far?  
[23] A: Well, I've read through the materials  
[24] that I was given. I would say that I've possibly  
[25] spent six hours at maximum, something like that.

Page 15

[1] MR. HARTON: Let me get this marked,  
[2] if I can, and then give it back to you.  
[3] Can you mark that?  
[4] (Defendant's Exhibits 4 and 5 marked  
[5] for identification.)  
[6] Q: (By Mr. Harton) What we've marked as  
[7] Exhibit 9 — or 4, I'm sorry, these are the  
[8] articles. Is this something you prepared for the  
[9] Raper case or was this prepared in connection with  
[10] other litigation?  
[11] A: I pulled the material out of this —  
[12] that's in that notebook for the Raper case. And I  
[13] actually had prepared the literature searches  
[14] earlier for another case. So you'll see the date  
[15] on those are several months old. But I put the  
[16] notebook together specifically for this case.  
[17] Q: What are your charges for your time?  
[18] A: I charge for a deposition minimum daily  
[19] fee of \$1,500, and then if it goes over — that's  
[20] based on \$300 an hour, and 250 for preparation  
[21] time.  
[22] Q: Have you — No. 12, the last one, this is  
[23] dealing with presentations, videotapes, recordings  
[24] or writings you may have made in connection with  
[25] seminars, speeches or presentations given to

Page

[1] lawyers or groups of lawyers.  
[2] Do you have anything that's responsive to  
[3] No. 12?  
[4] A: No.  
[5] Q: That being done, let's talk about —  
[6] first of all, I represent Chrysler Corporation.  
[7] Have you been provided any documents with respect  
[8] to Chrysler Corporation?  
[9] A: No.  
[10] Q: Have you ever been to a Chrysler  
[11] Corporation facility where they're making cars?  
[12] A: During the time I worked for NIOSH, I had  
[13] worked on several occasions with the Joint Labor  
[14] Management Committees of the auto workers from the  
[15] three major car companies. And in the process of  
[16] that I've been into a Chrysler plant, but it's been  
[17] 15, 20 years ago at least. And I don't — I think  
[18] it was a Chrysler plant, but it was in Detroit.  
[19] Q: An automobile plant?  
[20] A: Yeah, right.  
[21] Q: The time you went into this automobile  
[22] plant, were you at all focused on air sampling for  
[23] asbestos?  
[24] A: Mainly it was an orientation that we took  
[25] as a part of the tour of the plant. And it wasn't

Page

[1] really as a compliance activity or anything. The  
[2] only time that I've ever been in an auto plant that  
[3] really had anything to do with a health hazard  
[4] evaluation was when I was working on the models,  
[5] model makers, and there was some concern of the  
[6] models for the cars and disease that was occurring  
[7] among the model makers. And that was back in the  
[8] late '70s.  
[9] Q: What was the disease they were worried  
[10] about with these model plants?  
[11] A: I'm trying to remember right now. It  
[12] was — I think it was a concern about solvent  
[13] exposure.  
[14] Q: It wasn't asbestos or asbestos exposure?  
[15] A: No.  
[16] Q: Have you been given any — what I call  
[17] test results on tests of brake linings that would  
[18] attempt to quantify the amount of asbestos that may  
[19] be released by either installing or using brake  
[20] liners?  
[21] A: If you look at the notebook that he has,  
[22] Exhibit 4, the Lorimer paper — I think it may be  
[23] the number one or two paper in there, and the Rohl,  
[24] R-O-H-L — is that how you pronounce it? Rohl.  
[25] And they do give some figures. And then there are

Page 18

Page 20

[1] others in there that do talk about amount of fibers  
[2] released during the repair. But that's the  
[3] information. It's nothing that I've collected,  
[4] it's material that I've relied upon.

[5] Q: The information that you have been given  
[6] would have been, then, in effect, published  
[7] peer-reviewed reports?

[8] A: Yes.

[9] MR. HAINES: I'm not sure he  
[10] testified that was given to him. I think  
[11] that was —

[12] THE WITNESS: No. I pulled this. No  
[13] one gave that to me. I pulled that myself.

[14] Q: (By Mr. Harton) Let me change the  
[15] question. The information that you've — I'll  
[16] start over. The information that you have  
[17] quantifying the amount of asbestos released by  
[18] working with or installing brake linings has come  
[19] from the published peer review literature?

[20] A: And also NIOSH reports, which are like  
[21] the CIB that you're looking at right now, which is  
[22] not a published peer review but a NIOSH document  
[23] that —

[24] Q: Let me run through these. One of the  
[25] articles in here is the Current Intelligence

Page 19

Page 21

[1] Bulletin 5 of August 1975?

[2] A: Yes, sir.

[3] Q: It would have some attempt to quantify  
[4] the amount of asbestos fibers released by or around  
[5] garage mechanics.

[6] This CIB No. 5, August 1975, deals with  
[7] tests that were done on brake drums, dust from  
[8] brake drums. Is that right?

[9] A: That's correct.

[10] Q: The Rohl article I think you referred to  
[11] is asbestos exposure during brake lining  
[12] maintenance and repair?

[13] A: Yes.

[14] Q: That's a 1976 article?

[15] A: Right.

[16] Q: The Lorimer-Rohl article, I think also a  
[17] 1976 article, —

[18] A: Yes, that's correct. I think from there  
[19] on back there are literature reviews.

[20] Q: So all of the peer-reviewed literature  
[21] that you could find quantifying the amount of  
[22] asbestos released by working with brake — or I  
[23] should say friction products is all after 1965,  
[24] right?

[25] A: I believe that's correct.

[1] Q: Have you been given any unpublished,  
[2] un-peer-reviewed literature attempting to quantify  
[3] the amount of asbestos fibers released by using  
[4] brake linings?

[5] A: No, none other than what I've brought  
[6] with me.

[7] Q: I'm talking about being given as opposed  
[8] to what you found. That question I did mean to  
[9] say —

[10] A: No, sir.

[11] Q: All right. You've — I'm not sure which  
[12] exhibit this is.

[13] What is — Exhibit 5 includes the various  
[14] depositions of Mr. Raper, his co-workers and  
[15] others?

[16] A: Exhibit 5 includes everything that I was  
[17] given by plaintiff's attorneys, two medical reports  
[18] by Dr. Robb, the rest are depositions of — two of  
[19] Mr. Raper, and then the rest are co-worker  
[20] depositions.

[21] Q: Based upon all the information you've  
[22] received in the Raper case, do you have any  
[23] information to — that would support an opinion  
[24] that you may express at trial that Mr. Raper worked  
[25] with automobile brake linings after 1965?

[1] A: I don't believe I have anything — I'm  
[2] really not being asked to talk about his exposure,  
[3] but I don't think I have anything.

[4] MR. HAINES: Right. No. Dr. Lemen is  
[5] not being presented for that particular  
[6] opinion.

[7] Q: (By Mr. Harton) So from what you have  
[8] done, your review of all of the depositions,  
[9] Mr. Raper's deposition and his co-workers'  
[10] depositions, focusing on those only, you have no  
[11] information to say that he worked with automobile  
[12] brake linings after 1965, right?

[13] A: No.

[14] Q: Okay. Let's talk about — let's talk  
[15] about levels of exposure. Based on what you've  
[16] seen in Exhibit 5, you would agree that Mr. — or  
[17] is it your opinion that Mr. Raper was diagnosed  
[18] with mesothelioma?

[19] A: That's correct.

[20] Q: Have you done anything to attempt to  
[21] independently verify in any way this diagnosis, or  
[22] are you just using these reports as the basis for  
[23] your opinion?

[24] A: I'm relying upon these reports. First of  
[25] all, I'm not a medical doctor, so I'm not being

Page 22

Page

[1] brought in to verify a diagnosis or to substantiate  
[2] that. I'm making the presumption that the  
[3] diagnosis is correct.

[4] Q: You would agree that as a Ph.D.  
[5] epidemiologist, that asbestos-related diseases are  
[6] dose-related?

[7] A: Yes, I do.

[8] Q: And, for instance, mesothelioma, there  
[9] has to be some dose before the disease could be  
[10] related to asbestos exposure?

[11] A: Yes, there does.

[12] Q: You would agree that in the ambient air  
[13] in urban environments, be it Atlanta, Dallas or, I  
[14] think, any city in this country, there would be  
[15] some asbestos in the air?

[16] A: There's generally a background level of  
[17] asbestos, depending upon the urbanization of the  
[18] city. And probably in Atlanta it's getting a lot  
[19] bigger.

[20] Q: Yes, it's getting larger in Atlanta as  
[21] the city grows.

[22] Gosh, lose my train of thought.  
[23] Do you know of any attempt to quantify or  
[24] prove that ambient air concentrations of asbestos  
[25] can cause any asbestos-related disease?

Page 23

Page

[1] A: Well, there have been community studies  
[2] that have been done concerning asbestos and  
[3] disease. Been studies around the Canadian asbestos  
[4] mines and mills. The latest, I guess, is a paper  
[5] that was in New England Journal of Medicine,  
[6] looking at cancer rates in proximity. The original  
[7] paper that Chris Wagner did about mesothelioma in  
[8] South Africa actually looked at community  
[9] exposures. So there have been some studies that  
[10] did that. Newhouse in England looked at some  
[11] community studies done around asbestos factors.

[12] Q: Poor questions. I'm trying to exclude —

[13] A: Those type of things?

[14] Q: Yes. And, really, so you know, I know  
[15] those things are out there. I don't deny that.  
[16] But, for instance, for someone who would live in —  
[17] be it Atlanta or Dallas or in some city where  
[18] they're not next to a factory, they're not next to  
[19] a mine where asbestos ore is being taken out of the  
[20] earth, do you know of any studies in urban  
[21] environments, let's say, without those other  
[22] potential contaminants, that have attempted to  
[23] prove that ambient air concentrations can cause  
[24] asbestos-related diseases?

[25] A: I don't know of any that have been

[1] attempted to prove it. The National Cancer  
[2] Institute, about 20 years ago, did put out their  
[3] cancer maps, if you recall those, and they  
[4] published those. Those were not an attempt at  
[5] causation but were an attempt to show where there  
[6] were high rates of lung cancer versus low rates of  
[7] lung cancer based upon geographic location. But  
[8] they weren't an attempt to show causal association.  
[9] they were just an attempt to map it out. So I  
[10] don't — I think the answer to your question is no.

[11] Q: All right. Well, I'll take no and strike  
[12] everything else, then. Move to strike everything  
[13] else. No, that's all right.

[14] Now, obviously — or do you have  
[15] opinions — obviously, I represent a brake  
[16] manufacturer — excuse me. I represent Chrysler  
[17] Corporation. Excuse me. Let me get this straight.  
[18] We may have brakes on our cars because we want them  
[19] to stop.

[20] Do you have any information about the  
[21] types of asbestos that would have been used in the  
[22] brake linings we would have manufactured or used?

[23] A: I don't know specifically for Chrysler,  
[24] but I do know that in my career I was involved  
[25] quite heavily in doing studies of a major brake

[1] manufacturing facility, that being Raybestos  
[2] Manhattan. And, principally, the type of asbestos  
[3] used in that manufacturing facility — whether or  
[4] not cites later used that I don't know — was  
[5] chrysotile asbestos. But there were some mixed  
[6] exposures.

[7] Q: And the mixed exposures you're referring  
[8] to would have been at the Raybestos Manhattan  
[9] plant?

[10] A: In manufacturing of the material, yes.

[11] Q: And so you don't have any information  
[12] that Chrysler would have used any brakes that had  
[13] anything other than chrysotile in it; is that  
[14] right?

[15] A: I do not have any other type of  
[16] information. I don't know what type of brakes. I  
[17] don't even know where Chrysler bought the brakes.

[18] Q: Now, there are obviously different types  
[19] of asbestos, both amphiboles and serpentine and  
[20] chrysotile asbestos. In your opinion, can  
[21] chrysotile asbestos cause mesothelioma?

[22] A: I've published in this American Journal  
[23] of Health, British Occupational Hygiene Journal in  
[24] '97. Those are included in my time line. They're  
[25] also included in papers that are in the notebook

Page 26

[1] here. And my opinion is yes, chrysotile can cause  
[2] asbestos-related disease.  
[3] Q: And by chrysotile, I'm attempting to  
[4] refer to pure chrysotile without any contaminant of  
[5] any type.

[6] A: Very rarely do we find pure chrysotile,  
[7] because most chrysotile is contaminated with  
[8] amphiboles such as tremolite. And there have been  
[9] very few, if any, studies that I know of that have  
[10] looked at pure chrysotile, because they haven't  
[11] been really able to identify pure chrysotile.

[12] Q: Do you know anything about the processing  
[13] that's done with chrysotile ore, once it's taken  
[14] from the mine, before it can be used in other  
[15] products? Have you studied that?

[16] A: What do you mean by processing? I'm not  
[17] sure I understand the question.

[18] Q: My understanding is, is that they take  
[19] chrysotile ore and dig it out, for instance, like  
[20] you would coal, strip mining?

[21] A: Well most of the — with few exceptions,  
[22] most of the mines for asbestos in the world are  
[23] strip-type mines. And there are some underground  
[24] mines, but those are very few and not really used  
[25] for commercial purposes anymore, to my knowledge.

Page 27

[1] Q: After the ore is taken out, they have to  
[2] process it before they can get it to the point that  
[3] it can be used or incorporated into any products?

[4] A: They take it into a mill, where they  
[5] grind the ore away from the fibers and separate the  
[6] fibers, trying to get all of the non-asbestos ore  
[7] out of the material, and then it is shipped for  
[8] process manufacturing.

[9] Q: Do you know anything about the various  
[10] grades of chrysotile ore that have been used in  
[11] different —

[12] A: There are different grades. I'm not  
[13] really an expert on the different grades. I know  
[14] they are listed in the company, but I haven't  
[15] really compared one grade to another grade.

[16] Q: Have you ever seen any studies that  
[17] indicate that, based upon a test of a brake lining,  
[18] anyone has ever found tremolite in a brake lining?

[19] A: I don't know.

[20] Q: Have you ever seen any tests or studies  
[21] on dust from brake linings that indicate anyone  
[22] ever found tremolite in the dust from a brake  
[23] lining?

[24] A: I don't know. I have not seen any lists,  
[25] put it that way.

Page 28

[1] Q: Obviously, there are those who believe  
[2] that chrysotile, to cause mesothelioma, either  
[3] there must be intense, enormous concentrations or  
[4] it can't cause it at all. You're aware of that?

[5] A: I am aware of the scientific debate.

[6] Q: So you would agree that there's a debate  
[7] in the scientific community about that?

[8] A: Yes, I believe that chrysotile can cause  
[9] mesothelioma. That's correct.

[10] Q: Thank you.

[11] MR. HAINES: Better cut back on your  
[12] coffee.

[13] Q: (By Mr. Harton) You know where I'm going  
[14] and I appreciate the help, but you know how records  
[15] are. So excuse me.

[16] Now, brake linings, let's talk about  
[17] brake linings and regulations, I guess, for a  
[18] minute.

[19] Today, 1999, brake linings can be  
[20] manufactured and used with asbestos in them in the  
[21] United States, right?

[22] A: That's correct.

[23] Q: There is no regulation that has ever  
[24] prohibited brake linings from containing asbestos?

[25] A: Well, I don't know how you would classify

Page 29

[1] this, but when EPA tried to ban the use of asbestos  
[2] and then it was overturned by the 5th Circuit, I  
[3] don't know if — there was an attempt to do it, but  
[4] it was not upheld in the courts.

[5] Q: But at least the regulations that have  
[6] been enforced by our government have never banned  
[7] the use of asbestos in brake linings, right?

[8] A: With that one exception. And I don't  
[9] think it banned the use, but it did try to ban the  
[10] use of asbestos in general. I don't think it was  
[11] specific for brake linings.

[12] Q: But the — I just want to make a  
[13] distinction so you understand. I'm talking about  
[14] regulations that were enforced as opposed to  
[15] proposed legislation that was not enacted.

[16] A: I agree.

[17] Q: With regulations that have been enforced  
[18] by our government, they have never banned the use  
[19] of asbestos in brake linings?

[20] A: To the best of my knowledge, that's  
[21] correct.

[22] Q: Other than — there was one study in  
[23] Exhibit 4 — let me get to it — CIB bulletin,  
[24] August 1975.

[25] A: Yes, sir.

Page 30

Page

[1] Q: Do you have any other government — I  
[2] guess I'll call them studies of dust that would be  
[3] in brake drums?

[4] A: I didn't include everything, but there  
[5] are a number of health hazard evaluations that  
[6] NIOSH has done that have been in response to  
[7] looking at asbestos exposure in brakes.

[8] As a matter of fact, NIOSH did a very  
[9] large study looking at prevention of — and  
[10] prevention and suppression of dust. And I think,  
[11] as he was just pointing out, there's the EPA  
[12] guidelines that are included in that also.

[13] But I did not try and put together a  
[14] complete list of all the health hazard evaluations.  
[15] There are many of those, and they don't really add  
[16] to — I mean, there are some in there, but it's not  
[17] comprehensive.

[18] Q: So you'll know, I may — I'm going to ask  
[19] some questions now. I'll look through some of  
[20] this. I may have some more after I look through  
[21] that as opposed to me trying to guess what you're  
[22] doing. But let me look through this. It will make  
[23] things a lot easier and a lot less confusing.

[24] You would agree that in 1999 there is a  
[25] permissible exposure limit to asbestos that's

[1] Q: But after abatement contractors go into a  
[2] school, they have to test the air to make sure that  
[3] the quantity of asbestos is below some number  
[4] before they can send the kids back?

[5] A: I can tell you in answer to that that the  
[6] .01 was a recommendation that NIOSH made for  
[7] abatement. I don't know if EPA adopted that, but  
[8] that was one that we made based upon background  
[9] level of asbestos and the ability of the microscope  
[10] to measure down to that concentration.

[11] Q: And this recommendation you said that  
[12] NIOSH made, would that have been back mid 80's, I  
[13] think, or do you remember?

[14] A: It was around the mid '80s. I can't give  
[15] you an exact date.

[16] Q: I know we didn't go through it. It's on  
[17] your CV. What was your position until the mid  
[18] '80s at NIOSH?

[19] A: I was director of the Division of  
[20] Standards Development and Technology Transfer,  
[21] which was the division that formulated the policy  
[22] recommendations of the institute. And that was one  
[23] of them.

[24] Q: The United States, in making their PELs,  
[25] or OSHA, I should say, making its PEL, they have

Page 31

Page

[1] permitted in this country; is that right?

[2] A: Yes, sir.

[3] Q: That is .1 fiber per cc. on a time  
[4] weighted average, is that right?

[5] A: Yes, sir.

[6] Q: The OSHA PEL is done by a PCM count,  
[7] right?

[8] A: Phase contrast microscopy.

[9] MR. HAINES: If you just left it as  
[10] PCM it would be easier.

[11] THE WITNESS: I just want to make  
[12] sure that what you meant by PCM was the  
[13] same thing I meant by PCM.

[14] MR. FALK: If you'd been here  
[15] yesterday you would have known about that.

[16] Q: (By Mr. Harton) You're aware that there  
[17] are even regulations dealing with the ambient —  
[18] excuse me, let me start over.

[19] You're aware that the EPA has created  
[20] regulations governing post- abatement air in  
[21] schools that they define as clean air, right?

[22] A: Yes, sir.

[23] Q: And that is .01 fiber per cc., right?

[24] A: I can't tell you exactly off the top of  
[25] my head.

[1] not made a distinction between amphibole asbestos  
[2] and serpentine; right?

[3] A: That's correct.

[4] Q: But you are aware that there are other  
[5] governments, Britain, Canada for instance, that  
[6] make a distinction between the two types of fibers  
[7] in coming up with a PEL?

[8] A: I think now the U.K. and Britain have  
[9] banned all uses of asbestos. They used to make a  
[10] distinction, but I don't think that they do now. I  
[11] think that they just promulgated new regulations  
[12] that are about 11 countries that have now  
[13] officially banned the use of all forms — new —  
[14] how do I want to say it — importation or use of  
[15] asbestos in the future. But, yes, I agree with  
[16] you, there are countries that distinguish between  
[17] the various types of asbestos.

[18] Q: Now, Mr. Raper, do you know when —  
[19] assume — do you believe that he stopped using car  
[20] brakes or working with them in 1965, based on your  
[21] review of this information?

[22] A: I don't know the exact date, but  
[23] somewhere in that neighborhood, yes.

[24] Q: Do you know of any articles that would be  
[25] published either — including your time line.

Page 34

(1) No. 3 —

(2) A: Can I look at the time line for just a  
(3) second?

(4) Q: Okay, that's fine. — that would attempt  
(5) to study epidemiologically end users of brake  
(6) linings before 1965?

(7) A: There were case reports prior to 1965.  
(8) Epidemiologic studies, I think the answer is no.

(9) Q: So prior to 1965 there were no  
(10) epidemiological studies of the end users of brake  
(11) linings, indicating that they had an increased risk  
(12) of getting any asbestos-related disease?

(13) A: There were case reports, but the  
(14) epidemiologic studies, I think the answer is no.

(15) Q: Okay. I went through and looked at some  
(16) of your old time lines and tried to pull some of  
(17) the articles. And can you tell me which ones they  
(18) are? Could you just take a minute? We can  
(19) either — I'd just like to talk about those for a  
(20) minute.

(21) A: You mean case reports.

(22) Q: The case reports you're talking about.

(23) A: Let me get over here to the right page.  
(24) The first one I think that I mentioned  
(25) was the Fulton Report of 1935.

Page 35

(1) Q: I'm going to stop you for just a minute  
(2) because I've got that one.

(3) MR. FALK: Fulton, did you say?

(4) MR. HARTON: Fulton.

(5) THE WITNESS: Fulton, 1935.

(6) MR. FALK: That's the Commonwealth of  
(7) Pennsylvania?

(8) MR. HARTON: Yeah.

(9) THE WITNESS: I would just guess  
(10) that.

(11) Q: (By Mr. Harton) The Fulton study, would  
(12) you agree with me that this was — if you look at  
(13) page — I've got a copy of it here. Is this the  
(14) Fulton — it's not a good copy, but let me just  
(15) show it to you. This is a copy.

(16) A: Yes, that's it.

(17) Q: It's a poor-quality reproduction. I'm  
(18) sorry.

(19) A: Right.

(20) Q: In attempting to read — I've put a  
(21) little red mark there. Let me just quote this  
(22) incident, see if you can agree with what I said.  
(23) It says — this article says, quote, The industry  
(24) in this state consists mainly of several  
(25) fabricating plants engaged in the making of

Page 36

(1) asbestos cloth, brake lining, insulating tape.

(2) asbestos rope and wick and other miscellaneous  
(3) products.

(4) Right?

(5) A: That's correct.

(6) Q: So the Fulton article really deals with  
(7) what I will call the manufacturing of brake linings  
(8) as opposed to end users, right?

(9) A: That's correct.

(10) Q: If you will go to the next article.

(11) A: 1935, another article by — in Great  
(12) Britain.

(13) Q: Is that the HMSO?

(14) A: Yeah, that's Her Majesty's Stationary  
(15) Office. Basically, the equivalent report that  
(16) would come out, like OSHA or Public Health Service.  
(17) They talk in that report about the sawing, grinding  
(18) and turning of brakes.

(19) Q: Do you agree with me that this —  
(20) principally, the HMSO study — I've got a copy if  
(21) you want to look at it, again, it's a bad  
(22) quality — principally dealt with the manufacturing  
(23) of products in the industry as opposed to end  
(24) users.

(25) MR. HAINES: Object, vague as to

Page 37

(1) "principally."

(2) THE WITNESS: Well, I think  
(3) technically your answer is correct, but it  
(4) applies to the end user, because they're  
(5) talking about grinding and turning of the  
(6) brakes. And that's how I would interpret  
(7) it.

(8) Q: (By Mr. Harton) Would you go to the next  
(9) article please, sir.

(10) A: 1939, the George and Leonard. Do you  
(11) have that one? This is in brake manufacturing  
(12) workers.

(13) Q: Yeah. This is brake manufacturing  
(14) workers, right?

(15) A: Right.

(16) Q: Go to the next one.

(17) A: 1940, article by Stone. Do you have that  
(18) one? To answer your question, brake lining  
(19) manufacturing workers.

(20) Q: All right. Next?

(21) A: 1941, the Brachmann paper. Do you have  
(22) that one?

(23) Q: No, I do not.

(24) A: The risk of asbestosis among brake  
(25) grinders and drillers. That was published in —

Page 38

Page

[1] I've got these articles, I just didn't —

[2] Q: Could you get that one? Because that's  
[3] one that — one way or another somehow it just  
[4] didn't —

[5] MR. HAINES: Do you have it here with  
[6] you?

[7] THE WITNESS: No.

[8] Q: (By Mr. Harton) Just get us a copy for  
[9] it. I've got a search out for it, but we haven't  
[10] been able to locate it yet.

[11] A: I'm pretty sure I have it. It may take  
[12] me a while because a lot of my articles are on  
[13] microfiche and it's sometimes hard to —

[14] Q: Do it when you can. I understand. I've  
[15] tried to find it as well and had troubles.

[16] A: It was abstract, as you see in my  
[17] reference, and to — let's see, it was in the  
[18] Journal —

[19] Q: Obviously, do you have any recollection  
[20] as to whether, when they're talking about grinders  
[21] and drillers of brake bands, they're talking about  
[22] the manufacturing process or end users?

[23] A: I'm pretty sure they're talking about the  
[24] manufacture. But I'd have to go back and look at  
[25] that to make sure.

Page 39

Page

[1] Q: I understand. We can look at it when you  
[2] get it.

[3] If you would go to the next article,  
[4] please, sir.

[5] A: My time line only carries me up to the  
[6] passage of the Occupational Safety and Health Act,  
[7] and the articles that were in the notebook carry on  
[8] after that. So that's all I have in my time line,  
[9] luckily.

[10] Q: So we've discussed all the 1965 and  
[11] earlier articles that deal with brake linings in  
[12] any way under your time line?

[13] A: There may be others, but I haven't  
[14] included them in my time line.

[15] Q: Okay. Well, they're not on your time  
[16] line?

[17] A: That's correct.

[18] Q: The case — earlier we talked about case  
[19] reports. Are the case reports you were referring  
[20] to earlier about maybe a brake lining worker  
[21] getting asbestos-related disease, are those the  
[22] articles we just went through?

[23] A: Yes, sir.

[24] Q: Your work at the Raybestos Manhattan  
[25] plant, that was, I think, in the 1970s or '80s or

[1] when?

[2] A: I first went in the Raybestos plant in  
[3] the early '70s. I did a mortality study of workers  
[4] in that plant. The first publication is listed on  
[5] my CV of that plant. It actually appeared as a  
[6] report to the Congress of the United States and  
[7] appeared in the Congressional reports, the results  
[8] of a mortality study. Then we continued to analyze  
[9] and published, in 1976, I think, in the New York  
[10] Academy of Sciences' Occupational Cancer Symposium.

[11] the update of that. And that senior author on that  
[12] second publication was Robinson. It's listed in my  
[13] CV. So I was also involved in the industrial  
[14] hygiene survey of the Raybestos Manhattan plant.  
[15] This is the plant in Manheim, Pennsylvania.

[16] Then I also was involved in the  
[17] industrial hygiene and medical survey in the plant  
[18] — Raybestos plant in Charleston, South Carolina.

[19] Q: We'll focus on the Pennsylvania plant.

[20] A: The Pennsylvania plant was the one that I  
[21] spent the most time in.

[22] Q: The Pennsylvania plant, that's one that  
[23] you would have started the study of the plant  
[24] workers. I would say, in the 1970s?

[25] A: Yes, sir.

[1] Q: Now, brake products, would they be  
[2] defined as friable or nonfriable under the EPA  
[3] definition?

[4] A: I think the brake products in the final  
[5] form would be considered nonfriable. But I'm not  
[6] an expert on the EPA definition.

[7] Q: Do you know anything at all about any  
[8] trade associations or other organizations that  
[9] Chrysler may have been a member of?

[10] A: I haven't specifically looked at  
[11] Chrysler, no, sir.

[12] Q: Now, mesothelioma is a disease. I  
[13] think — was it first linked to asbestos exposure  
[14] by, I think, Dr. Wagner around 1960?

[15] A: Well, there were reports of mesothelioma  
[16] as early as 1943 from Germany. There were reports  
[17] from the Canadian asbestos mines in 1952, I think  
[18] that was. And there were other case reports that  
[19] occurred prior to Dr. Wagner's paper in 1960. And  
[20] his paper in 1960 was related — the first  
[21] comprehensive epidemiological evaluation of workers  
[22] engaged in the mining, milling and community  
[23] exposures dealing with asbestos.

[24] Q: So Dr. Wagner's work, that is, I think,  
[25] published in 1960, was the first epidemiological

Page 42

Page 44

[1] study that linked asbestos exposure to the disease  
[2] mesothelioma?

[3] A: By that time that was the conclusion that  
[4] he came to, yes, sir.

[5] Q: And Dr. Wagner, in 1960, I think, was  
[6] studying mines in South Africa?

[7] A: That's correct.

[8] Q: Was that principally crocidolite?

[9] A: That's correct.

[10] Q: At what point in time were there  
[11] epidemiological studies that attempted to determine  
[12] that chrysotile could cause mesothelioma?

[13] A: Let me just refer to this. Wagner did  
[14] mention chrysotile but didn't find any disease.  
[15] And he attributed that to the fact that they had  
[16] shorter latencies and there was a large turnover.  
[17] But then McDonald looked at chrysotile in the  
[18] Canadian mills and mines in the early '70s. So I  
[19] think most of the data on chrysotile  
[20] epidemiologically, case reports started occurring  
[21] when McDonald started looking at the chrysotile  
[22] mines and mills in the Canadian area.

[23] Q: What — which is the first article you  
[24] have on your time line, just so I'll know?

[25] A: Well, Cartier, 1957.

Page 43

Page 45

[1] Q: I mean the epidemiological McDonald  
[2] study. There have been so many. That's what I'm  
[3] trying to find.

[4] A: McDonald, I'm sorry.

[5] Q: Is that the early '70s?

[6] A: 1973. Let me get — asbestosis. The  
[7] first article that I have in my time line appeared  
[8] in IARC Scientific Publication No. 8 on the  
[9] chrysotile mines and mills. And there were two  
[10] papers, actually, one on asbestosis and the second  
[11] one on cancer from the mills, and they were both  
[12] IARC scientific publications. I have those. I  
[13] mean, I didn't bring them.

[14] And then McDonald has another paper in  
[15] 1977 on exposure relationships and mesothelioma  
[16] and the proceedings of the Asbestos Symposium in  
[17] Johannesburg, South Africa. And then there are a  
[18] series of other —

[19] Q: Others, that's fine. I'm just looking  
[20] for the earliest, and that's all I need. I think  
[21] you answered that.

[22] When you would do air samplings, — and  
[23] I'm sure a lot of them were done while you were at  
[24] NIOSH — did NIOSH always use the phase contrast  
[25] microscopy in counting fibers?

[1] A: Well, when I was at NIOSH, yes. Prior to  
[2] my coming and even after I came, for a while they  
[3] were also looking at total dust by using the  
[4] impinger method of sampling for particles per cubic  
[5] foot. And when I first came to NIOSH, we also, in  
[6] addition to the phase contrast microscopy, is used  
[7] these gigantic, high-volume samplers that we would  
[8] sit in the middle of an area of an asbestos plant  
[9] that would pull very high volumes of air through.  
[10] And those were looking at weight of dust and total  
[11] dust that was in the atmosphere. So — but for  
[12] personal samples, the only type that I ever took  
[13] were the membrane filter, PCM-type samples.

[14] Q: In the work that you or others would have  
[15] done, I assumed for you, at NIOSH, did they always  
[16] use direct preparation techniques?

[17] A: I'm not sure I know what you mean by  
[18] direct preparation.

[19] Q: For instance, there are a number of  
[20] different types of techniques to sample for  
[21] particulate matter in the air, be it asbestos or  
[22] something else. One I know that the phase contrast  
[23] microscopy requires is taking a filter, adding  
[24] personal samples, for instance, having air drawn  
[25] with particulate matter in it. Then they count

[1] what's on the filter. That's what I call the  
[2] direct method.

[3] A: The answer to that is yes. And it was  
[4] directly related to the NIOSH 7400 analytical  
[5] methodology.

[6] Q: Because that's what's required?

[7] A: Right.

[8] Q: You do not accept other types of methods  
[9] for comparison to OSHA PEL, would you?

[10] A: I don't know what you're getting at, so I  
[11] don't know if I can answer that. But that's an  
[12] area that is somewhat beyond the area of my  
[13] expertise.

[14] Q: Well, for instance, when you or others at  
[15] NIOSH were out there sampling to determine  
[16] workplace exposures, you would comply with the OSHA  
[17] requirements for sampling dust in the air, and that  
[18] would be 7400, the direct method?

[19] A: Well, OSHA was using our methodology,  
[20] yes, sir.

[21] Q: So it would comply with your own  
[22] methodology, right? Either way?

[23] A: We developed the methodology that was  
[24] later employed by OSHA in their sampling.

[25] Q: In sampling.

Page 46

Page

[1] Have you ever sampled or looked at the  
[2] dust in brake drums to determine how much of that  
[3] dust is converted to forsterite?

[4] A: NIOSH has. I have not personally.

[5] Q: Are those articles at all in either  
[6] Exhibit 4 or your time line?

[7] A: I think they're mentioned in there. But  
[8] I don't know specifically if they determine the  
[9] amount of forsterite that's produced. I think it  
[10] depends upon the use of the brake and the heat of  
[11] the brake as to the amount of forsterite. I don't  
[12] know that I've ever seen it totally quantified, if  
[13] that's what you're getting at. But I'll certainly  
[14] agree with you that it does occur and to an extent.

[15] Q: I'll look through 4 and see if there are  
[16] quantifications, and we'll talk about that in a  
[17] minute. I'm not going to bore you with it now.

[18] But on that same line, in looking at the  
[19] drum dust, do you know of quantifications of the  
[20] amount of fibers, asbestos fibers, now that would  
[21] be greater than five microns in length that have  
[22] been seen in various studies?

[23] A: I think that — you mean after the brake  
[24] is used or —

[25] Q: Brake drums and discs.

Page 47

Page

[1] A: In the composition of the brake?

[2] Q: After it's been used.

[3] A: I think the Lorimer paper goes into some  
[4] quantification, talks about the average amount of  
[5] fibers found in the brake dust. I think his  
[6] greatest concentrations were found three to five  
[7] feet away from the brake drum after it had been  
[8] blown, and the average concentration was somewhere  
[9] around 15 fibers per cc. greater than five micron.  
[10] There's a table in there if you want me to point it  
[11] out.

[12] Q: Yeah, I think I found it. Let me look  
[13] through this. I'm just talking about the size and  
[14] length of the fibers, that they were —

[15] A: Well, they were only counting greater  
[16] than five micron in length. So they weren't  
[17] counting below five micron in length. So what I  
[18] was referring to would have referred to those that  
[19] were greater than five micron.

[20] Q: The manufacturing process for making the  
[21] brake lining, that would obviously include various  
[22] bonding resins and Lord-only-knows-what to make it  
[23] stay together, right?

[24] A: Right.

[25] Q: And part of the brake lining is obviously

[1] — or some of them would have contained asbestos.  
[2] right?

[3] A: Yes.

[4] Q: The bonding agents, mastics, resins,  
[5] whatever they are, would affect the aerosol dynamic  
[6] properties of the asbestos fibers if they're ever  
[7] released?

[8] A: They could.

[9] Q: And if bonding agents or mastics were  
[10] still attached to an asbestos fiber, that could  
[11] prevent it from being inhaled and retained in the  
[12] lungs?

[13] A: It could, yes, sir.

[14] Q: I'm going to look through your articles  
[15] and things like this. I'm sure I'll have some  
[16] questions. But I'd like to look through this, and  
[17] at some point in time I'm going to take — I'll  
[18] just do this later.

[19] A: What is that?

[20] Q: Your disclosure, one of the things we  
[21] get. Maybe I can just ask you this now. I'm going  
[22] to talk about these articles. I represent  
[23] Chrysler, and we've got a case next week. And I  
[24] don't know if you've seen this, but this is the  
[25] disclosure that I have given.

[1] A: I think this is a standard disclosure.

[2] Q: Yeah, it's a standard disclosure.

[3] Let me ask a question and you can tell me  
[4] if I'm wrong. I'm trying to find out if I've  
[5] touched on the areas you were going to testify  
[6] about Chrysler Corporation. For instance, when you  
[7] get to trial, is there anything I haven't covered?  
[8] And if there is, let me know.

[9] MR. HAINES: Object to the question  
[10] of having him anticipate, without knowing  
[11] how he's going to respond to questions that  
[12] we ask him. And to say, well, have you  
[13] testified as to anything about Chrysler, I  
[14] don't think that's a proper question.

[15] MR. ELLISTON: Excuse me. At this  
[16] point I want to register an objection.  
[17] Plaintiff's counsel is going beyond simply  
[18] stating an objection to the form. Under  
[19] the new rules, anything beyond "objection  
[20] to form" is inappropriate. So I object to  
[21] plaintiff's counsel going beyond that  
[22] objection.

[23] MR. HAINES: Duly noted.

[24] Q: (By Mr. Harton) You can respond. You  
[25] can respond, Dr. Lemen.

Page 50

[1] A: I've — as far as I know, unless I'm  
[2] asked questions that I can't anticipate, you've  
[3] covered everything. But, I mean, I have to put  
[4] that in, because if plaintiff's counsel asked me a  
[5] question and you haven't anticipated it, I will —  
[6] and I knew the answer, I would give an answer.

[7] MR. HARTER: Well, let me look  
[8] through some articles and I'll let some  
[9] other folks talk to you.

[10] CROSS-EXAMINATION

[11] BY MR. FALK:

[12] Q: Good morning, Doctor. My name is Eric  
[13] Falk, I represent Allied Signal.

[14] My first question to you is, has anybody  
[15] shown you any documents pertaining to Allied Signal  
[16] or its predecessor, the Bendix Corporation?

[17] A: I don't believe so.

[18] Q: Okay. Have you ever conducted or worked  
[19] on any industrial hygiene surveys at airline  
[20] maintenance facilities?

[21] A: Specifically looking at asbestos, no.  
[22] But I have at airline maintenance facilities, and  
[23] I've published on — just so the record is  
[24] straight — on principally looking at  
[25] cardiovascular disease among airline refueling

Page 51

[1] operations, around airline maintenance facilities.  
[2] And we've published on that from exposure to carbon  
[3] monoxide, but not as it relates to asbestos.

[4] Q: Okay. And I take it, then, you certainly  
[5] have not participated in any industrial hygiene  
[6] surveys at either Dallas-Ft. Worth Airport or Love  
[7] Airfield?

[8] A: That's correct.

[9] Q: Okay. I want to look at the — talk to  
[10] you a bit about chrysotile epidemiology. And I  
[11] want to focus on epidemiology. And let's put off  
[12] to the side for a moment animal studies and then  
[13] we'll get back to that.

[14] Would you agree that the McDonald cohort  
[15] in Canada is the largest ongoing chrysotile-only  
[16] cohort?

[17] A: I would agree that it's probably the  
[18] largest. I don't know of others that are larger.  
[19] We do have a study ongoing that was initiated by  
[20] NIOSH while I was still at NIOSH.

[21] Q: Is that the South Carolina —

[22] A: No, no. Well, that's one that was done.  
[23] But we have an ongoing study, which the results  
[24] have not been published yet. And I'm not a part of  
[25] it anymore because I'm not at NIOSH. But I

Page 52

[1] initiated the study of the chrysotile mines in the  
[2] Siberian area of Russia. It's a joint study with  
[3] NIOSH, the Finnish Institute and the Russian  
[4] Institute. And the only results so far, to my  
[5] knowledge, that have been published are the  
[6] industrial hygiene samples of several hundreds of  
[7] samples that were taken in that. And that is  
[8] bigger, as far as volume, than the McDonald. But  
[9] the epidemiology and medical are still ongoing, to  
[10] the best of my knowledge.

[11] Q: So I think the first part of your answer  
[12] was that if we looked at published epidemiology you  
[13] would agree that the McDonald Quebec cohort is the  
[14] largest published cohort?

[15] A: I agree.

[16] Q: Are you familiar with the articles of the  
[17] McDonald group published in '97 and '98, about five  
[18] or six of them?

[19] A: I think I've read every one that Corbett  
[20] and his wife Allison have put together. And I know  
[21] both of them pretty well, so —

[22] Q: Okay. Then maybe we can short-circuit  
[23] this. And rather than breaking out the articles,  
[24] I'm going to try to summarize the results. You  
[25] tell me if my summaries are wrong, and if we're

Page 53

[1] right we're going to move on.

[2] A: Okay.

[3] Q: They found that the excess of lung cancer  
[4] mesothelioma arose predominantly from the central  
[5] area of the Thetford mines, correct?

[6] A: I believe that's correct.

[7] Q: And they also found there was a high  
[8] level of tremolite contamination in the central  
[9] area of the Thetford mines, correct?

[10] A: I believe that's true.

[11] Q: And they found that even within the  
[12] central area of the Thetford mines, the excess does  
[13] not arise until you get to exposures that are  
[14] roughly at five to six million particles per cubic  
[15] foot; is that correct?

[16] A: Somewhere in that neighborhood. I can't  
[17] remember the exact number.

[18] Q: Or if we wanted to just put it in some  
[19] kind of lingo, the old ACGIH standard, roughly in  
[20] that neighborhood?

[21] A: I believe that's what they were using.  
[22] The authors concluded that it was — from an  
[23] epidemiological point of view, the tremolite, that  
[24] was the reason for the excess in mesothelioma,  
[25] correct. I believe that is a part of the

Page 54

Pag

[1] conclusion. But I think that McDonald also  
[2] concluded that they had found — if I can remember  
[3] exactly how they put it, they had found  
[4] mesothelioma to occur in ones that did not have  
[5] tremolite contamination, but very few.  
[6] Q: Okay. Those were from the peripheral  
[7] areas of Thetford?  
[8] A: Yes, sir.  
[9] Q: And they did not find an excess rate in  
[10] the peripheral areas, correct?  
[11] A: They did not find it, as compared to a  
[12] standard population. But they did find  
[13] mesothelioma.  
[14] Q: One of the things that the McDonald's  
[15] focused on as they looked at the possibility of  
[16] tremolite contamination was bio-persistence and  
[17] durability of fibers: correct?  
[18] A: That's correct.  
[19] Q: And tremolite would fit, would be a  
[20] candidate that would fit the issue of  
[21] bio-persistence and durability, correct?  
[22] A: If you're talking about, simply put,  
[23] residence time in the lung, that's correct.  
[24] Q: Chrysotile is not as bio-persistent and  
[25] is not as durable, correct?

Page 55

Pag

[1] A: Chrysotile gets into the lung and gets  
[2] out of it quicker than the amphibole-type fibers.  
[3] Q: And you're familiar with the clearance  
[4] rates and the studies on the clearance rates for  
[5] chrysotile, correct?  
[6] A: Yes, sir.  
[7] Q: Are you familiar with any studies  
[8] pertaining to man-made mineral fibers, their  
[9] biopersistence and durability and their possible  
[10] impact on the development of mesothelioma?  
[11] A: By man-made mineral fibers, do you  
[12] include such things — are you talking just  
[13] epidemiology now or are you talking animal studies?  
[14] Q: This would be animal studies.  
[15] A: If you're talking — do you include  
[16] refractory ceramic fiber in that definition?  
[17] Q: Yes, fiberglass refractory ceramic fiber.  
[18] A: There are fairly new animal studies on  
[19] refractory fibers coming out of Geneva-sponsored  
[20] studies by I guess it's Thermal Insulation  
[21] Manufacturers Association that have shown  
[22] mesothelioma occurring in fairly high numbers in  
[23] animals that have been exposed to respirable  
[24] refractory ceramic fibers. And those are just in  
[25] the process of being published. I happen to have

[1] copies of the pre-published articles.  
[2] Q: And have you read Dr. Hesterberg's work  
[3] on man-made mineral fibers?  
[4] A: Yes, sir.  
[5] Q: If we were to look solely at  
[6] epidemiology, is it still your opinion, that is,  
[7] from an epidemiological point of view, there is a  
[8] lower risk of mesothelioma among chrysotile  
[9] populations as opposed to amphibole populations?  
[10] A: In the 1996 publication that I did with  
[11] Leslie, Stayner and Dankovic in the American  
[12] Journal of Public Health, we concluded that  
[13] mesothelioma can occur in chrysotile populations,  
[14] but it is at a lower rate than it would occur in an  
[15] amphibole population, but still at a significant  
[16] level.  
[17] Q: Do you still agree that case reports are  
[18] not as strong as an epidemiological study?  
[19] A: Of course.  
[20] Q: Kind of a handy layman's analogy that  
[21] I've used.  
[22] And I'll throw this out to you, and you  
[23] tell me whether you like it or not, is that a case  
[24] report can frame the question, the epidemiology  
[25] provides the answer. Does that sound acceptable?

[1] A: Case reports are usually what we use to  
[2] generate hypotheses for conducting epidemiological  
[3] studies. So I think we're saying the same thing.  
[4] Q: Do you agree with the proposition that an  
[5] epidemiologist should look for a relative risk of  
[6] two or greater in order to associate an agent with  
[7] a disease?  
[8] A: I don't agree with that specifically, no.  
[9] Q: Okay. Do you agree that that is a view  
[10] held by many epidemiologists in your field?  
[11] A: I won't put many. I'll put that it is a  
[12] view held by some epidemiologists in my field.  
[13] Q: What relative risks do you look for?  
[14] A: It depends on the size of the cohort.  
[15] You could have a significant excess relative risk  
[16] if you had a large cohort and a large exposure  
[17] than, say, even at 1.5 or even lower. It depends  
[18] upon the population you're studying. And I think  
[19] that arbitrarily assigning 2 as the cutoff point is  
[20] not something that I would do, and it's not  
[21] something that we did when I was at NIOSH.  
[22] Q: Are you aware of any epidemiological  
[23] study of automobile mechanics or brake repair  
[24] workers, end users, not manufacturing plants,  
[25] showing an increased risk of mesothelioma in the

Page 58

[1] populations?  
[2] A: Epidemiologic studies?  
[3] Q: Um-hum.  
[4] A: I would have to go back and look at my  
[5] book. I can't answer that question right now.  
[6] MR. HARTON: This one? Here. Go  
[7] ahead.  
[8] Q: (By Mr. Falk) One of the MedLine  
[9] summaries you have in your book is the Woitowitz  
[10] and Rodelsperger 1994 article.  
[11] You have a MedLine summary of that  
[12] article in your notebook. Have you read the  
[13] article itself?  
[14] A: I have sometime ago. I haven't read it  
[15] recently.  
[16] Q: Do you recall what the author's  
[17] conclusion was?  
[18] A: Well, if you know exactly where it's at  
[19] in here, it would help me.  
[20] Q: It's one of the larger, bold print.  
[21] MR. HARTON: Towards the front, yeah.  
[22] Very early.  
[23] THE WITNESS: It was one of the very  
[24] first ones. I remember that. Yeah, okay.  
[25] Okay.

Page 59

[1] Q: (By Mr. Falk) When was the last time you  
[2] looked at that article, Doctor?  
[3] A: I can't remember.  
[4] Q: Okay. Do you recall the conclusions of  
[5] the authors of that article?  
[6] A: As in the summary, yes, sir.  
[7] Q: The conclusions were that they found no  
[8] increased risk of mesothelioma in the car mechanics  
[9] in Germany?  
[10] A: That none occurred, that's correct.  
[11] Q: Are you aware that Drs. Woitowitz and  
[12] Rodelsperger have been studying car mechanics,  
[13] their exposure and disease rate, in Germany since  
[14] the mid 1980s?  
[15] A: I don't know when they started.  
[16] Q: Are you aware of any of their prior work?  
[17] A: Not other than what's in here.  
[18] Q: Is it still true that you don't think of  
[19] yourself as an expert in dust dispersion and  
[20] aerosol dynamics?  
[21] A: I've never presented myself as that.  
[22] Q: You have not participated in any fiber  
[23] release testing of friction products?  
[24] A: No, sir. Here is the book back, unless  
[25] you want —

Page 60

[1] MR. HARTON: I don't know if you —  
[2] thanks.  
[3] Q: (By Mr. Falk) Other than the Phoenix  
[4] ground water case, which I know is not an asbestos  
[5] case, have there been any other cases where your  
[6] testimony has been excluded or limited?  
[7] A: Not to my knowledge.  
[8] Q: Okay.  
[9] A: There have been cases where there's  
[10] summary judgment, but I don't think it was directed  
[11] at me particularly.  
[12] Q: I don't want to get into the Phoenix  
[13] ground water case, not unless we have about an hour  
[14] to talk on that.  
[15] Are you aware of any attempts to quantify  
[16] the projected mortality in brake repair workers?  
[17] A: No.  
[18] Q: I want to take a look at some of the  
[19] articles that you cited in your article with  
[20] Drs. Dankovic and Stayner.  
[21] A: Yes, sir.  
[22] Q: Okay. Do you have that article with you?  
[23] A: Yeah. It's somewhere around here.  
[24] Q: Just so we can read from it together  
[25] without me looking over your shoulder.

Page 61

[1] A: I don't know how it fell apart, but — in  
[2] fact, I've got it right here.  
[3] Q: If you could turn to Table 1.  
[4] A: Yes.  
[5] Q: Okay. There are two articles I'm  
[6] interested in that you put in the table as showing  
[7] excesses of either lung cancer, mesothelioma or  
[8] both. The first one is the Finkelstein article.  
[9] A: The automotive, yes, sir.  
[10] Q: Do you have a copy of that with you?  
[11] A: No, I don't.  
[12] Q: Okay. I'll pass it over. I just want to  
[13] go through that rather quickly.  
[14] Is it true that, if you turn to page 128  
[15] of the article, they found that among men there  
[16] were no diseases associated with a significantly  
[17] increased SMR?  
[18] MR. HAINES: Hang on, Doctor, do you  
[19] need a minute to review the article?  
[20] Q: (By Mr. Falk) I'm sorry. Page 128, I'm  
[21] looking at.  
[22] A: Let me just look at it for a minute.  
[23] Okay. What is your question?  
[24] Q: Is true that Dr. Finkelstein found among  
[25] men there were no diseases associated with a

Page 62

Page

[1] significantly-increased SMR except for laryngeal  
[2] cancer?  
[3] A: I'm having trouble reading this.  
[4] Q: It's as good a copy as I could get.  
[5] A: You're talking overall, or what are  
[6] you — you need to point that out. It's probably  
[7] my bifocals.  
[8] Q: That's quite all right. Okay.  
[9] A: You say 128.  
[10] Q: Right. Okay. Right here. Among —  
[11] first off, they studied two automotive parts plants  
[12] in Ontario, correct?  
[13] A: Right.  
[14] Q: And brake parts were made at those  
[15] plants, correct?  
[16] A: To my knowledge, that's correct.  
[17] Q: Okay. And here on page 128 they say that  
[18] among men, no diseases except for laryngeal cancer  
[19] were associated with a significantly increased SMR.  
[20] Have I read that part correctly?  
[21] A: That's correct.  
[22] Q: And then they go on to say that there  
[23] were no trends of increasing SMR with increasing  
[24] length of employment.  
[25] A: Right.

Page 63

Page

[1] Q: Have I read that correctly?  
[2] A: Yes, sir.  
[3] MR. HAINES: Can I see it?  
[4] MR. FALK: Sure. When you're done  
[5] with that I have a few more questions on  
[6] that article, if you don't mind me looking  
[7] over your shoulder.  
[8] THE WITNESS: No.  
[9] Q: (By Mr. Falk) Turn to page 129.  
[10] They then did a case control analysis in  
[11] order to analyze whether there was an association  
[12] between the employment and the asbestos-related  
[13] diseases that they thought they had found, correct?  
[14] A: Right.  
[15] Q: And they concluded the case control  
[16] analysis revealed no association between the risk  
[17] of lung cancer and employment in a department where  
[18] asbestos had been used or duration of employment.  
[19] A: Correct.  
[20] Q: And they go on and they say that even  
[21] within the laryngeal cancers, none of the laryngeal  
[22] cancers had worked in an area where asbestos had  
[23] been used.  
[24] Correct?  
[25] A: Right.

[1] Q: The next one I want to talk about in  
[2] Table 1 is the McDonald article.  
[3] A: Right.  
[4] Q: Okay. This is the study of the  
[5] Connecticut friction plant.  
[6] A: Is this Connecticut or is this the —  
[7] Q: I think it's Connecticut.  
[8] A: I thought — yeah. Okay.  
[9] Q: Okay.  
[10] A: It was — Connecticut was one plant.  
[11] yeah.  
[12] Q: Yes. Okay. First off, the McDonald's  
[13] found no mesotheliomas in that plant, correct?  
[14] A: That's what they report, yes, sir.  
[15] Q: Okay. And turning to lung cancer, the  
[16] increased mortality that they found was due mostly  
[17] to the people that had worked one year or less at  
[18] the factory, correct?  
[19] A: Well, I don't know if you said it the  
[20] right way. They say that excluding men who had  
[21] worked for less than a year, there was possible  
[22] evidence of some increased risk of lung cancer with  
[23] increasing exposure. So it was occurring in those  
[24] that were greater than one year.  
[25] MR. HAINES: That's actually the

[1] opposite of what he said.  
[2] THE WITNESS: I think, if I've — you  
[3] said less than one year.  
[4] Q: (By Mr. Falk) Less than or equal to one  
[5] year.  
[6] A: Right here. Unless they've misstated it  
[7] in there.  
[8] Q: Let's go to page 155 of the article. And  
[9] they talk about that the most confusing aspect of  
[10] the study is the fact that the only subcohort with  
[11] SMRs clearly above expectation comprises men  
[12] employed for less than one year.  
[13] Correct?  
[14] A: That's total SMRs. That's in contrast to  
[15] what you were asking about lung cancer.  
[16] Q: Then they go on to say, thus, were it not  
[17] for the subjects with minimal employment or dust or  
[18] dust exposure or both, the mortality experience of  
[19] this cohort would be close to expected.  
[20] A: That's what they say there.  
[21] Q: Okay. Workers who work less than one  
[22] year, we call those transient workers. Would that  
[23] be a good way to phrase it?  
[24] A: They may not like to be called that.  
[25] Q: I understand. Scientifically, you tend

Page 66

Page 68

1) to call them transient workers?

2) A: Yes.

3) Q: Transient workers generally just have,  
4) perhaps because of their lifestyles, just higher  
5) risks for many diseases, many conditions, correct?

6) A: That's possible.

7) Q: Okay.

8) THE WITNESS: Can we go off the  
9) record for just a second?

10) (Recess taken.)

11) Q: (By Mr. Falk) Doctor, do you still agree  
12) that, with regard to fiber length, the  
13) preponderance of the evidence up until the 1980s  
14) was that fibers less than five microns in length  
15) did not lead to asbestos-related disease?

16) A: There's a preponderance of the evidence  
17) to answer yes, but there is some evidence there may  
18) be disease in these smaller, but that was the  
19) preponderance of the evidence.

20) Q: And you still believe that the longer  
21) fibers tend to be more carcinogenic than shorter  
22) fibers?

23) A: Yes, sir.

24) Q: You mentioned the Camus article. Are you  
25) familiar with any follow-ups or letters to the —

Page 67

1) A: The what article?

2) Q: I call it Camus.

3) A: Camus?

4) Q: Camus. I call it Camus because of the  
5) French author.

6) A: Well, I didn't take French. I call it  
7) Camus.

8) Q: It could be either one.  
9) You mentioned that earlier. Are you  
10) aware of any of the follow-up or letters to the  
11) editor that have come since that article?

12) A: Well, I know the editorial that  
13) accompanied the article. I have not read the  
14) follow-up letters.

15) MR. FALK: Okay. That's all I have,  
16) sir. Thank you.

17) CROSS-EXAMINATION  
18) BY MR. GUSTAFSON:

19) Q: Dr. Lemen, I'm Ivan Gustafson of  
20) Pittsburgh Corning.

21) Have your opinions changed about  
22) Pittsburgh Corning since this time last week?

23) A: No.

24) Q: Have you seen anything new in the last  
25) seven days to change your opinion about Pittsburgh

1) Corning?

2) A: No.

3) Q: As a housekeeping question, part of  
4) Exhibit 5 was Volume I of the Raper deposition. Is  
5) that the one that you had brought with you and the  
6) one we had marked, or the one that we sent was a  
7) copy of one?

8) A: Did I maybe make a copy? It's what was  
9) sent to me. And the first part is missing every  
10) other page. So it's only a portion of it. And I  
11) didn't call back and ask for another copy because I  
12) didn't really rely that much upon it.

13) Q: So you received the Volume I of the Raper  
14) deposition in alternate page format, if you will?

15) A: Exactly like it is there, yes, sir. And  
16) that's just the first part of it. The second page  
17) is four-page format.

18) Q: With respect to the classification of  
19) persons called commercial airline mechanics, is  
20) that occupation one that has been identified by a  
21) government agency or state agency, to your  
22) knowledge, to have been at risk from or at risk for  
23) asbestos-related diseases?

24) A: I don't know. I don't know of any.

25) Q: Are you aware — and I guess it would be

Page 69

1) true, then, in your years of government work and  
2) following the literature, you're not aware of any  
3) pronouncement or proclamation from any government  
4) agency stating that commercial aircraft mechanics  
5) were an at-risk group for asbestos-related  
6) diseases, is that right?

7) A: I don't know of any.

8) Q: Did you review the work history of  
9) Mr. Raper?

10) A: Only as presented in the material that I  
11) received.

12) Q: Did you notice if he worked at a micarda  
13) plant for some period of time?

14) A: I'd have to look at it again.

15) MR. JOHNSON: I've taken the  
16) deposition out of there.

17) THE WITNESS: It should be on this, I  
18) think. Where did you see that? I'm just  
19) trying to —

20) Q: (By Mr. Gustafson) I believe it was 63,  
21) 64, maybe the third or fourth.

22) A: You said micarda.

23) Q: Micarda plant in Hampton, South Carolina.

24) MR. HAINES: Herndon Motor Freight,  
25) Hampton, South Carolina.

Page 70

[1] Q: (By Mr. Gustafson) Before that page. I  
[2] hate to do this, but let me come over there.  
[3] A: Okay. I saw Westinghouse, but I  
[4] wasn't — yes, sir.  
[5] Q: Are you familiar with that product,  
[6] micarda?  
[7] A: No, sir.  
[8] MR. GUSTAFSON: That makes it short.  
[9] All right. That's it.  
[10] MR. FALK: Good job.  
[11] MR. HAINES: Next.  
[12] CROSS-EXAMINATION  
[13] BY MR. JOHNSON:  
[14] Q: Dr. Lemen, my name is Jonathan Johnson.  
[15] I'm here today representing Georgia Pacific. I  
[16] just have a few questions for you.  
[17] In this case have you been given any  
[18] documents to review that directly refer to Georgia  
[19] Pacific or a company called Bestwall?  
[20] A: Other than what I've shown here, that's  
[21] the only material I've been given.  
[22] Q: Do you have any reason to believe that  
[23] Mr. Raper worked with or around any joint compound?  
[24] MR. HAINES: Object to the form.  
[25] Go ahead.

Page 71

[1] THE WITNESS: It's my understanding  
[2] that he did. But I haven't been asked to  
[3] specifically identify the products or  
[4] anything of that nature.  
[5] Q: (By Mr. Johnson) What's your  
[6] understanding that he did based on?  
[7] A: The material that I read in here of his  
[8] work history. And that's it.  
[9] Q: And that does include Mr. Raper's  
[10] deposition, does it not?  
[11] A: Yes, it does.  
[12] MR. HAINES: It does.  
[13] Q: (By Mr. Johnson) Did you see that in  
[14] Mr. Raper's deposition he testified that he — his  
[15] claim with respect to joint compounds was during  
[16] the time period 1986 to 1998?  
[17] MR. HAINES: Object to form.  
[18] THE WITNESS: I don't remember the  
[19] exact dates.  
[20] Q: (By Mr. Johnson) Do you have any  
[21] knowledge as to whether any of the joint compounds  
[22] that Mr. Raper may have worked around contained any  
[23] asbestos at all?  
[24] A: I don't know.  
[25] Q: Do you know whether any joint compounds

Page

[1] manufactured after 1986 would have contained  
[2] asbestos?  
[3] A: I don't know the answer. They could  
[4] have. By law they could have. But I don't know.  
[5] Q: Do you know whether Georgia Pacific ever  
[6] manufactured any joint compound that contained  
[7] asbestos?  
[8] A: I don't know.  
[9] Q: Are you aware of any studies regarding  
[10] the impact of working with or around joint  
[11] compounds on the health of the workers?  
[12] A: I know that there are studies that show  
[13] that carpenters and other people employed that  
[14] would use joint compounds but have other exposures  
[15] are at increased risk of developing  
[16] asbestos-related diseases.  
[17] Q: Okay. Do you know of any studies that  
[18] would say that people other than those you just  
[19] mentioned would be at risk just because they happen  
[20] to be in the vicinity?  
[21] A: Dr. Selikoff did some research in his  
[22] group on looking at bystanders, if that's what  
[23] you're getting at. And so there are studies out  
[24] showing that workers that didn't work directly with  
[25] an asbestos product but were working in the

Page

[1] vicinity of others that were working with asbestos  
[2] products were at an increased risk of developing  
[3] disease.  
[4] Q: Okay. And what specifically are the  
[5] studies by Dr. Selikoff that you're referring to?  
[6] A: Well, the one that shows that they're at  
[7] risk by looking at exposure is a study that Reitze,  
[8] R-E-I-T-Z-E — I think it's listed in my time  
[9] line — has conducted, looking at people directly  
[10] applying asbestos insulation and then looking at  
[11] welders and others that are not directly in the  
[12] area but around the area that have higher exposure  
[13] levels to asbestos. And that's the type of work  
[14] that he was doing.  
[15] Q: Okay. Did that study include anything  
[16] with respect to joint compounds?  
[17] A: I don't know. I don't think so.  
[18] Q: Do you think there may be differences  
[19] between asbestos insulation and joint compounds?  
[20] A: Yes.  
[21] Q: Sir, do you have any knowledge as to  
[22] whether joint compounds would contain friable  
[23] asbestos?  
[24] A: You mean friable?  
[25] Q: Friable, sorry.

Page 74

[1] A: I don't know exactly. I'm not an expert  
[2] on joint compounds.

[3] MR. JOHNSON: Okay. Thank you, sir.

[4] CROSS-EXAMINATION

[5] BY MR. ELLISTON:

[6] Q: Dr. Lemen, as you know, my name is Gary  
[7] Elliston and I'm here on behalf of several  
[8] companies.

[9] Would you agree, sir, that the U.S.  
[10] Public Health Service has been in existence since  
[11] 1798?

[12] A: Yes, sir.

[13] Q: The U.S. Public Health Service recently  
[14] celebrated their 200th anniversary, didn't they?

[15] A: Yes, sir.

[16] Q: How long were you a member of that  
[17] organization?

[18] A: From 19 — September of 1970 to March 1  
[19] of 1996.

[20] Q: The Surgeon General is actually the head  
[21] of the U.S. Public Health Service, isn't he?

[22] A: Yes.

[23] Q: He or she?

[24] A: He or she.

[25] Q: The United States Public Health Service

Page 75

[1] has studied asbestos and its potential health  
[2] hazards since the 1930s, hasn't it?

[3] A: That's correct.

[4] Q: The U.S. Public Health Service bears  
[5] responsibility for the health of a variety of  
[6] people and organizations, including the Indian  
[7] reservations, Merchant Marines, that type of thing,  
[8] don't they?

[9] A: They don't do the Merchant Marine  
[10] anymore. That — under President Reagan they took  
[11] that responsibility away from us. But they do the  
[12] federal prisons still and Indian reservations.

[13] Q: The U.S. Public Health Service has  
[14] addressed the potential hazards of asbestos and how  
[15] to control those hazards since at least the 1930s,  
[16] haven't they?

[17] A: Yes, sir.

[18] Q: The United States Government first issued  
[19] any type of regulation and enforceable regulation  
[20] concerning the exposure levels to asbestos in 1960,  
[21] didn't they?

[22] A: I think I now have information under the  
[23] Walsh-Healey that they actually — the first was  
[24] 1952. But it's in that same time period. I  
[25] recently found some reference in the Walsh-Healey

Page 76

[1] Act to a 1952 mention. I could provide that to  
[2] you. I don't have it with me.

[3] Q: The first time the U.S. Government  
[4] created or issued or published any type of warning  
[5] to be used in the workplace or on products  
[6] containing asbestos was in 1972, when OSHA  
[7] regulations were created; correct?

[8] MR. HAINES: Object to form.

[9] THE WITNESS: Are you referring to  
[10] the — including in the 1972 criteria  
[11] document that NIOSH put out to OSHA, or are  
[12] you saying just for the OSHA standard? But  
[13] '72 is correct, in either case.

[14] Q: (By Mr. Elliston) Okay, sir. You  
[15] actually participated on the committee that issued  
[16] the 1972 criteria document for NIOSH, didn't you?

[17] A: My role in that criteria document was not  
[18] a decision-making role but one of putting together  
[19] the tables that appeared in the appendix of the  
[20] criteria document showing the technical feasibility  
[21] of achieving the recommendation. But I did not  
[22] have any role in making the decision what the  
[23] standard was at that time.

[24] Q: Were you a member of the committee?

[25] A: I don't know that you'd call it — I

Page 77

[1] wasn't a member of a committee. I was a worker  
[2] that was told to put together and take all the  
[3] information the Public Health Service had collected  
[4] up to that point in time and put it in the tables  
[5] that appeared in the back of that book. So if you  
[6] call that a part of a committee, I guess yes, the  
[7] answer is yes. But I wasn't — it wasn't my  
[8] decision at that time as to what the standard would  
[9] be.

[10] Q: Was Dr. Joseph Wagner one of the members  
[11] of the group that had decision-making authority?

[12] A: I think his name's in the criteria  
[13] document as being there. I don't think my name  
[14] appears in the criteria document as being on any  
[15] committee. But I did work for Dr. Joseph Wagner at  
[16] that time.

[17] Q: Was Dr. Joseph Wagner one of the members  
[18] who had decision-making authority for that 1972  
[19] NIOSH criteria document?

[20] A: I believe he was.

[21] Q: Now, when NIOSH issues their criteria  
[22] documents and makes recommendations to OSHA, those  
[23] recommendations are based upon the best available  
[24] science and what NIOSH believes is best for the  
[25] workers from a health perspective, isn't it?

Page 78

Page

[1] A: That's correct.  
[2] Q: In that 1972 criteria document there was  
[3] a permissible exposure level recommended for  
[4] asbestos exposure in the workplace, wasn't there?  
[5] A: Yes, sir.  
[6] Q: Would you agree, sir, that in 1972, that  
[7] OSHA, NIOSH, the U.S. Public Health Service, they  
[8] were all aware of the potential hazards of asbestos  
[9] and how those hazards should be dealt with in the  
[10] workplace?  
[11] A: All of the hazards of asbestos? I don't  
[12] think in 1972 they were aware of everything they  
[13] know today about asbestos, but I'm not sure I  
[14] understand your question. I need a little  
[15] clarification on it.  
[16] Q: In your opinion, sir, were NIOSH, OSHA  
[17] and the U.S. Public Health Service aware of all the  
[18] scientific data and medical research concerning  
[19] asbestos hazards and how those hazards should be  
[20] controlled in the workplace as of 1972?  
[21] A: I believe —  
[22] MR. HAINES: Object to form.  
[23] THE WITNESS: I believe they would  
[24] have known or should have known.  
[25] Q: (By Mr. Elliston) In 1972, this warning

[1] A: At that point in my career, yes, sir.  
[2] Q: Those were recommendations of exposure  
[3] levels that you yourself would have been willing to  
[4] work in or to have had your family work in, isn't  
[5] that true?  
[6] A: At that time, yes.  
[7] Q: Would you agree, sir, that that group,  
[8] that decision-making group from the 1972 criteria  
[9] document, while addressing asbestosis, were also  
[10] concerned about the potential cancer risk of  
[11] workers in the workplace?  
[12] A: Yes, sir.  
[13] Q: Has anyone made you aware, sir, of  
[14] Dr. Egleman's sworn testimony that the members of  
[15] that committee weren't concerned or did not care  
[16] whether workers developed cancer?  
[17] MR. HAINES: Object to the form.  
[18] THE WITNESS: I can't tell you what  
[19] Dr. Egleman — you know, what was in his  
[20] mind, but I know what my opinion is.  
[21] Q: (By Mr. Elliston) And your opinion is  
[22] that those individuals were very concerned about  
[23] the health and safety of workers in the workplace,  
[24] isn't it?  
[25] A: That they were concerned, yes.

Page 79

Page

[1] that was required by OSHA was required not only to  
[2] be put on thermal insulation products but it was  
[3] also required to be posted in the workplace  
[4] wherever asbestos might be used, wasn't it?  
[5] A: I believe that's correct.  
[6] Q: In fact, the OSHA regulations are  
[7] directed toward the employer of the individual  
[8] worker, aren't they?  
[9] A: Yes, sir.  
[10] Q: Are you also aware, sir, that under the  
[11] laws of the state of Texas since 1958, that  
[12] exposure levels to asbestos were required to be  
[13] kept below five million particles per cubic foot of  
[14] air?  
[15] A: I have heard that. I have not seen that  
[16] law, to the best of my knowledge.  
[17] Q: Have you been provided any industrial  
[18] hygiene information or dust sampling results that  
[19] would indicate that Mr. Raper was ever exposed to  
[20] levels of asbestos above the TLV or PEL in  
[21] existence at the time of that exposure?  
[22] A: No.  
[23] Q: Did you agree with the recommendations  
[24] that were made in the 1972 criteria documents by  
[25] NIOSH?

[1] Q: Have you reviewed any corporate documents  
[2] or depositions with any corporate representatives  
[3] from Armstrong World Industries or Armstrong Cork  
[4] Company?  
[5] A: I don't recall having done that.  
[6] Q: Have you reviewed any documents or any  
[7] depositions of any corporate representatives of the  
[8] Ruberoid Company or GAF?  
[9] A: I don't recall doing that, no, sir.  
[10] Q: Have you reviewed any corporate documents  
[11] or depositions of corporate representatives of the  
[12] Dana Corporation?  
[13] A: I don't believe so.  
[14] Q: Have you reviewed any corporate documents  
[15] or depositions of corporate representatives of  
[16] Flexitallic?  
[17] A: I don't believe so.  
[18] Q: Have you reviewed any corporate documents  
[19] or depositions of corporate representatives of  
[20] Turner and Newell?  
[21] A: I don't believe so.  
[22] Q: Have you reviewed any corporate documents  
[23] or depositions of corporate representatives of the  
[24] CertainTeed Company?  
[25] A: I don't believe so.

Page 82

[1] Q: Have you reviewed any corporate documents  
[2] or depositions of corporate representatives of the  
[3] Riley Stoker Company?

[4] A: I don't believe so.

[5] Q: Have you reviewed any corporate documents  
[6] or depositions of corporate representatives of 3M?

[7] A: I don't believe so. I — with the last  
[8] question, 3M as relates to asbestos?

[9] Q: Yes, sir.

[10] A: No.

[11] Q: Have you reviewed any corporate documents  
[12] or depositions of corporate representatives of  
[13] National Gypsum?

[14] A: Corporate documents? I've been in a  
[15] trial that dealt with National Gypsum, but I don't  
[16] recall reviewing any of their corporate documents.

[17] Q: Have you reviewed any depositions of any  
[18] employee of National Gypsum, to your knowledge?

[19] A: I don't believe so.

[20] Q: Have you reviewed any corporate documents  
[21] or depositions of corporate representatives of the  
[22] U.S. Gypsum Company?

[23] A: I don't believe so.

[24] Q: Have you conducted or reviewed any  
[25] studies on the fiber release of any products

Page 83

[1] manufactured by Armstrong World Industries or  
[2] Armstrong Cork Company?

[3] A: I don't believe so.

[4] Q: Have you conducted or reviewed any  
[5] studies on the fiber release of any product  
[6] manufactured by the Ruberoid or GAF companies?

[7] A: I don't believe so.

[8] MR. HAINES: Gary, you can shorten it  
[9] to one question and I won't object to being  
[10] compound, if you want to.

[11] MR. ELLISTON: I appreciate that, but  
[12] at the time I need to examine him in the  
[13] trial I expect all these companies will not  
[14] be sitting there. Therefore, I'd rather  
[15] separate them.

[16] MR. HAINES: That's probably true.

[17] (Recess taken.)

[18] Q: (By Mr. Elliston) Sir, have you  
[19] conducted or reviewed any studies on the fiber  
[20] release of any product manufactured by CertainTeed?

[21] A: Not to my knowledge.

[22] Q: Have you conducted or reviewed any  
[23] studies on the fiber release of any product  
[24] manufactured by Riley Stoker?

[25] A: Not to my knowledge.

Page 84

[1] Q: Have you conducted or reviewed any  
[2] studies on fiber release of any product  
[3] manufactured by T&N?

[4] A: Not to my knowledge.

[5] Q: By T&N I mean Turner & Newell.

[6] A: Right.

[7] Q: Have you conducted or reviewed any  
[8] studies on the fiber release manufactured by  
[9] Flexitallic?

[10] A: Not to my knowledge.

[11] Q: Have you conducted or reviewed any  
[12] studies on the fiber release of any product  
[13] manufactured by Dana?

[14] A: Not to my knowledge.

[15] Q: Have you conducted or reviewed any  
[16] studies on the fiber release of any product  
[17] manufactured by National Gypsum or U.S. Gypsum?

[18] A: Not to my knowledge.

[19] Q: Have you ever visited a facility that  
[20] manufactured joint compound or wallboard?

[21] A: I believe I have. But ask me which  
[22] facility — it would have been in the early '70s —  
[23] I can't tell you.

[24] Q: Have you ever visited or inspected a  
[25] facility of the National Gypsum Company?

Page 85

[1] A: I don't believe so, unless they were  
[2] owned previously by another organization.

[3] Q: Have you ever visited or inspected a  
[4] facility owned by the U.S. Gypsum Company?

[5] A: Again, my answer would be the same unless  
[6] they were owned by a different name. I don't  
[7] recall going into any.

[8] Q: Have you ever visited or inspected a  
[9] facility operated by the Armstrong World Industries  
[10] Company or Armstrong Cork Company?

[11] A: I don't believe so, unless they were  
[12] owned by another company prior to that.

[13] Q: I think that company has gone by  
[14] Armstrong Cork Company or Armstrong World  
[15] Industries, Inc. since the late 1800s.

[16] A: I don't recall ever going in there.

[17] Q: Have you ever inspected or visited a  
[18] facility owned or operated by Ruberoid or GAF?

[19] A: Not to my knowledge.

[20] Q: Have you ever been to any facility owned  
[21] or operated by Flexitallic?

[22] A: Until today I never heard of Flexitallic.

[23] Q: That might eliminate a few additional  
[24] questions.

[25] Have you reviewed — I'm sorry. Have you

Page 86

Page

[1] visited or inspected a facility owned by  
[2] CertainTeed?  
[3] A: I may have. I can't remember which one.  
[4] Q: Have you visited or inspected any  
[5] facility owned or operated by Riley Stoker?  
[6] A: No, not to my knowledge.  
[7] Q: Would you agree, sir, that you cannot  
[8] testify to the state of mind, motivation or thought  
[9] processes of any representative or employee of  
[10] Armstrong World Industries or Armstrong Cork  
[11] Company?  
[12] A: Yes.  
[13] Q: In fact, sir, regardless which company I  
[14] put in the question, you can't testify to the state  
[15] of mind, motivation or thought processes of any  
[16] company representative or employee, can you?  
[17] A: Correct.  
[18] Q: Can you identify any manufacturer who was  
[19] manufacturing ceiling tile that contained asbestos  
[20] after 1985?  
[21] A: No, sir.  
[22] Q: Can you identify any company that was  
[23] manufacturing joint compound that contained  
[24] asbestos after 1985?  
[25] A: No, sir.

Page 87

Page

[1] Q: You brought some literature today  
[2] concerning friction products. Have you ever  
[3] published or gathered literature on fiber release  
[4] from floor tiles or flooring material?  
[5] A: Not to my knowledge.  
[6] Q: Have you ever published or gathered  
[7] literature on fiber release from ceiling tiles?  
[8] A: I don't believe so.  
[9] Q: Have you ever published or gathered any  
[10] literature on fiber release from gaskets?  
[11] A: I don't believe so.  
[12] Q: Have you ever published or gathered  
[13] literature on fiber release from adhesives,  
[14] sealants or coatings?  
[15] A: I don't believe so.  
[16] Q: Would you agree, sir, that gaskets,  
[17] flooring materials, adhesives, sealants and  
[18] coatings would all be classified as nonfriable  
[19] products under the EPA?  
[20] A: Again, in answer to the earlier question,  
[21] I don't know the exact definition, but I believe  
[22] that that would be the case.  
[23] Q: Have you been provided any information  
[24] that indicates that Mr. Raper ever encountered any  
[25] warning signs in any of his workplaces after June

[1] of 1972 that indicated there was asbestos being  
[2] used in that workplace?  
[3] A: Other than what might be contained in the  
[4] material that I gave, I'm not aware of any.  
[5] Q: And you're not aware of any from your  
[6] review of that material, are you?  
[7] A: No.  
[8] Q: Would you also agree, sir, that under the  
[9] OSHA regulations, that the employer was required to  
[10] have the employee have a physical examination each  
[11] year if they were being exposed to asbestos?  
[12] A: I'd have to go back to the regulation.  
[13] And I think that's correct, but I don't know the —  
[14] Q: You would agree that under OSHA, any  
[15] employee being exposed to asbestos was required to  
[16] be medically monitored after 1972 by their  
[17] employer, wouldn't you?  
[18] A: Yes, sir.  
[19] Q: You've not been given any information  
[20] that Mr. Raper was medically monitored or required  
[21] to have a physical examination each year after  
[22] 1972, have you?  
[23] A: No.  
[24] Q: In fact, sir, under OSHA, that if an  
[25] employee was being exposed to asbestos above the

[1] permissible exposure levels and engineering  
[2] controls were not feasible, they were required to  
[3] be given respiratory protection, weren't they?  
[4] A: Correct.  
[5] Q: And based on all you saw, Mr. Raper was  
[6] never required by his employer to wear respiratory  
[7] protection, was he?  
[8] A: I did not see that.  
[9] Q: Are you aware, sir, of any  
[10] epidemiological study that has looked at the  
[11] mortality or morbidity of flooring applicators or  
[12] flooring mechanics?  
[13] A: No.  
[14] Q: Are you aware of any epidemiological  
[15] study that has looked at the morbidity or mortality  
[16] of workers who are using ceiling tiles or applying  
[17] sealant material?  
[18] A: There have been studies that may have  
[19] included those, but nothing specific to that  
[20] particular job.  
[21] Q: Would you agree, sir, that the first  
[22] epidemiological study that identified a risk of  
[23] asbestos-related disease in workers working with or  
[24] around joint compound was the study in the mid  
[25] 1970s, specifically 1975, by Dr. Selikoff's group?

Page 90

[1] A: I believe that's true, but I —

[2] Q: Would you also agree, sir, that the first  
[3] study that indicated that persons in the household  
[4] of asbestos workers might be at risk of  
[5] asbestos-related disease was a study, the  
[6] Anderson-Lillis study of 1976?

[7] MR. HAINES: Object to form.

[8] THE WITNESS: I believe that was the  
[9] first study.

[10] Q: (By Mr. Elliston) Have you reviewed or  
[11] conducted any studies on fiber release from  
[12] automotive gaskets, meaning gaskets used in  
[13] automotive combustion engines?

[14] A: I don't believe so.

[15] Q: As I understand it, sir, you've not had  
[16] any communication with anyone concerning  
[17] Mr. Raper's case other than Plaintiff's attorney;  
[18] is that correct?

[19] A: That's correct.

[20] Q: In other words, you have not had any  
[21] communication with any of the co-workers, his  
[22] physicians or the families themselves; have you?

[23] A: You mean directly talk to them?

[24] Q: Yes.

[25] A: No, sir.

Page 91

[1] Q: Based on the information you've been  
[2] given, are you aware, sir, whether Mr. Raper was  
[3] ever diagnosed with any non-malignant,  
[4] asbestos-related disease such as asbestosis or  
[5] asbestos-related pleural plaques prior to receiving  
[6] his cancer diagnosis?

[7] A: I don't know of any.

[8] Q: Sir, would you agree that it has been  
[9] your recommendation for the last quarter century  
[10] that in-place asbestos products that are in good  
[11] condition that have not been damaged should be left  
[12] alone and left in place?

[13] A: That has been my opinion. But monitored.

[14] Q: When NIOSH was making recommendations to  
[15] OSHA about the permissible exposure levels, those  
[16] were levels that were being recommended for all  
[17] types of asbestos-related diseases, including the  
[18] cancers, weren't they?

[19] A: I think the 1992 really didn't address  
[20] the cancer issue to any extent. But all the rest  
[21] of them, after that point in time, were, yes, sir.

[22] MR. HAINES: You said '92.

[23] THE WITNESS: I mean '72. I'm sorry.  
[24] Not '92, '72.

[25] Q: (By Mr. Elliston) I'll see if I can

Page 92

[1] clear that up for both of us.

[2] After the 1972 criteria document, each  
[3] additional criteria documents, when there were  
[4] recommended levels of exposure given to OSHA by  
[5] NIOSH, those levels were to protect against all  
[6] asbestos-related diseases, including the cancers,  
[7] weren't they?

[8] A: If you recall the 1976 criteria document  
[9] that I and John Dement wrote for NIOSH, it said  
[10] that the concentration we recommended, that being  
[11] the 0.1, which is the current OSHA standard, was  
[12] based upon technological feasibility and phase  
[13] contrast microscopy to reduce the risk, but we  
[14] could not guarantee it would eliminate the risk of  
[15] cancer.

[16] So the level was not based upon the  
[17] health effect, it was based upon a technological  
[18] feasibility of measuring at that concentration.

[19] MR. ELLISTON: Objection, nonresponsive.

[20] Q: (By Mr. Elliston) Isn't it true, sir,  
[21] that when NIOSH made recommendations to OSHA  
[22] concerning permissible exposure levels, those  
[23] recommendations were made for all types of — all  
[24] types of asbestos-related disease, including the  
[25] cancers?

Page 93

[1] MR. HAINES: Object to form.

[2] THE WITNESS: Well, yes, they were,  
[3] with that provision that I put on.

[4] Q: (By Mr. Elliston) Well, you would agree,  
[5] sir, that NIOSH didn't recommend different levels  
[6] to protect against asbestosis and then a different  
[7] level to protect against cancers?

[8] A: If that's your question, that's correct.

[9] Q: Would you also agree that in the 1940s  
[10] and 1950s and 1960s, no doctor or scientist with  
[11] U.S. Public Health Service ever recommended that  
[12] asbestos not be used onboard government ships and  
[13] aircraft because of any potential hazard?

[14] A: I don't know the answer to that. I don't  
[15] know if anybody did or did not, but I don't know of  
[16] anybody doing it.

[17] Q: You've never seen any evidence that  
[18] anybody with U.S. Public Health Service ever spoke  
[19] up and said, don't use asbestos onboard Naval ships  
[20] or military aircraft, have you?

[21] A: I don't know of any. The answer is no.

[22] Q: Would you likewise agree, sir, that you  
[23] cannot cite any textbook that was published in the  
[24] 30's, '40s, '50s or even the '60s that advocated  
[25] banning asbestos?

Page 94

Page

[1] A: Well, I think Dr. Hueper's textbook,  
[2] 1942, certainly talked about the risk, but I don't  
[3] think he ever said anything about banning the use  
[4] of asbestos.  
[5] Q: Therefore, you would agree, sir, you  
[6] could not identify any textbook that advocated  
[7] banning asbestos in the 1930s, 1940s, 1950s or  
[8] 1960s, can you?  
[9] A: Not that I recall.  
[10] Q: Can you identify any textbook that  
[11] advocated banning asbestos in the 1970s?  
[12] A: Well, I think that — by your definition  
[13] of textbook, would you include the annals of the  
[14] New York Academy of Sciences in 1965 as a textbook?  
[15] Because you kind of skipped over the '60s.  
[16] Q: Well, let me go back to this for a  
[17] second. Go back to your question for a second.  
[18] I am specifically dealing with textbooks,  
[19] and we'll talk about the annals in just a moment.  
[20] A: Okay.  
[21] Q: Which —  
[22] A: A textbook, by your definition, is a  
[23] textbook used for training people?  
[24] Q: Correct.  
[25] A: Okay.

Page 95

Page

[1] Q: Are you aware of any textbook that  
[2] advocated banning asbestos in the 1970s?  
[3] A: Not with — not right now, no, I can't  
[4] tell you anything.  
[5] Q: Did Mount Sinai, in their — did Mount  
[6] Sinai or the New York Academy, did they advocate  
[7] banning asbestos in the 1960s or 1970s?  
[8] A: Well, in the discussion section, I think  
[9] it was Mr. Roach representing industry, said that  
[10] the only safe level that would protect all workers  
[11] was zero, which I would say would be essentially  
[12] the recommendation, not to use it, or ban it. So I  
[13] don't think he used the word ban, but he said that  
[14] was the only safe concentration.  
[15] Q: Did Dr. Selikoff himself ever publish the  
[16] opinion that asbestos should not be used in  
[17] industry in the 1960s, 1970s or 1980s?  
[18] A: I don't know that he did, no, sir.  
[19] Q: Did any member of the U.S. Public Health  
[20] Service publish the opinion in the 1950s, 1960s or  
[21] 1970s that asbestos should not be used in industry?  
[22] A: Other than the statement in the criteria  
[23] document that I alluded to before that you said was  
[24] nonresponsive, I don't think so.  
[25] Q: Did NIOSH come out and issue the opinion

[1] or recommendation that asbestos be banned from use  
[2] in industry in the 1970s?  
[3] A: I think they recommended substitution  
[4] when possible, but never an outright statement of  
[5] banned.  
[6] Q: It has been the opinion and the  
[7] recommendation of the U.S. Public Health Service  
[8] from the 1930s right up through the 1970s that you  
[9] should control the dust levels, and by controlling  
[10] the dust levels, control disease, when dealing with  
[11] asbestos, hasn't it?  
[12] A: Reduce the risk of disease, yes, sir.  
[13] Q: Sir, since you retired from NIOSH, would  
[14] you estimate that you have testified, either in  
[15] deposition or trial, approximately 50 times?  
[16] A: That's probably correct.  
[17] Q: Would you agree, sir, that at this point  
[18] in time approximately 60 to 75 percent of your  
[19] income comes from litigation?  
[20] A: I would guess that would be correct.  
[21] Q: When you went through the material for  
[22] this case, did you make any notes yourself?  
[23] A: No, sir.  
[24] Q: Would you agree, sir, that an individual  
[25] just looking at dust can't tell whether that dust

[1] contains asbestos or not?  
[2] A: I agree with you.  
[3] Q: You have to look at the dust or the  
[4] particles under a microscope to determine whether  
[5] they're asbestos or not, don't you?  
[6] A: That's correct.  
[7] Q: Would you also agree, sir, that the first  
[8] large-scale epidemiological study about asbestos  
[9] was done by Dr. Merewether in 1930 over in England  
[10] on textile workers?  
[11] A: I certainly think that's the biggest of  
[12] the first studies done, yes, sir.  
[13] Q: And, again, Dr. Merewether was dealing  
[14] with textile workers who were working with raw  
[15] asbestos in poorly-ventilated plants rather than in  
[16] end-product users, wasn't he?  
[17] A: That's correct.  
[18] Q: And, of course, what Dr. Merewether  
[19] recommended was that you suppress the dust levels  
[20] and control the disease, wasn't it?  
[21] A: Yes, sir.  
[22] Q: And at that study Dr. Merewether did not  
[23] identify any mesotheliomas, did he?  
[24] A: Not to my knowledge.  
[25] Q: In fact, Dr. Merewether did not report

Page 98

[1] any cancers in that study, did he?  
[2] A: That's correct.  
[3] Q: Sir, I've heard you mention Dr. Hoffman  
[4] or Mr. Hofman's report before, and I want to just  
[5] ask you a few questions about that.  
[6] The Hoffman report of 1918, that was a  
[7] governmental document, wasn't it?  
[8] A: That was from the — I believe the Bureau  
[9] of Labor Statistics, by the Department of Labor.  
[10] Q: And that document referred to asbestos  
[11] workers but did not refer to end-product users, did  
[12] it?  
[13] A: I don't believe it did.  
[14] Q: So that document would take  
[15] U.S. Government's knowledge about asbestos at least  
[16] back to 1918, wouldn't it?  
[17] A: I believe so. At least the Department of  
[18] Labor, that part of the government.  
[19] Q: Now, if we go to 1935, we have  
[20] Dr. Lanza's study, which was the first large-scale  
[21] epidemiological study of the United States, wasn't  
[22] it?  
[23] A: The one when he was with Metropolitan?  
[24] Q: 1935.  
[25] A: Yes, I think so.

Page 99

[1] Q: Is that correct?  
[2] A: I said yes.  
[3] Q: Okay.  
[4] A: I think so.  
[5] Q: Dr. Lanza's 1935 study in the U.S.,  
[6] again, was dealing with textile workers who were,  
[7] for all practical purposes, working with pure  
[8] asbestos dust in factories, wasn't it?  
[9] A: That's correct.  
[10] Q: And Dr. Lanza, again, recommended that  
[11] you suppress the dust and control disease?  
[12] A: I believe that's correct.  
[13] Q: And then, in 1938, U.S. Public Health  
[14] Service, with Dr. Dreessen, does a study of  
[15] asbestos textile workers?  
[16] A: That's when the study was reported.  
[17] Q: And Dr. Dreessen did not report any  
[18] mesotheliomas, did he?  
[19] A: No, sir.  
[20] Q: Dr. Lanza did not report any  
[21] mesotheliomas?  
[22] A: Correct.  
[23] Q: And Dr. Dreessen went beyond just the  
[24] standard recommendation that you should suppress  
[25] the dust and control disease, he went a step

Page 100

[1] further and recommended a tentative threshold limit  
[2] value, didn't he?  
[3] A: It wasn't called a threshold limit value  
[4] at that time, it was just a guidance limit, I think  
[5] he called it.  
[6] Q: What Dr. Dreessen said in his 1938 study  
[7] was that if you kept the dust levels below five  
[8] million particles per cubic foot, that you would  
[9] expect almost the total disappearance of disease,  
[10] didn't he?  
[11] A: The disease asbestosis, yes, sir. He did  
[12] report some cases below that concentration, but  
[13] that's essentially what his conclusion was.  
[14] Q: And, again, this Dr. Dreessen's study was  
[15] reported on textile workers and it was reported in  
[16] a U.S. Government publication under the seal of the  
[17] U.S. Surgeon General, wasn't it?  
[18] A: Well, I don't know if it was under the  
[19] seal, I've never heard it put that way. But it  
[20] was a U.S. Government publication of the Public  
[21] Health Service.  
[22] Q: And the Surgeon General was in charge and  
[23] the head of the U.S. Public Health Services; is  
[24] that correct?  
[25] A: Yes, that's correct.

Page 101

[1] Q: Then in 1946 we have the first  
[2] large-scale epidemiological study concerning pipe  
[3] covers or people working with thermal insulation  
[4] products in the United States, don't we?  
[5] A: Are you referring to the Fleischer study?  
[6] Q: Yes, sir.  
[7] A: Yes, sir.  
[8] Q: And the Fleischer-Drinker study, again,  
[9] was a study conducted by the U.S. Navy and the  
[10] U.S. Maritime Commission, wasn't it?  
[11] A: I believe that's correct.  
[12] Q: In the Fleischer-Drinker study, did they  
[13] report any mesotheliomas?  
[14] A: No, sir.  
[15] Q: Did the Fleischer-Drinker study report  
[16] any lung cancers or malignancies of any type that  
[17] they associated with asbestos?  
[18] A: I don't believe so.  
[19] Q: In your opinion, sir, is cigarette smoke  
[20] fibrogenic?  
[21] A: Fibrogenic?  
[22] Q: Yes, sir.  
[23] A: It can cause — I'm not sure that I can  
[24] answer that question, whether it's fibrogenic or  
[25] not.

Page 102

[1] Q: Let me rephrase the question for you.  
[2] Would you agree, sir, that cigarette smoke causes a  
[3] fibrotic reaction in the lungs?  
[4] A: It can.  
[5] Q: Would you agree, sir, that interstitial  
[6] fibrosis progresses more rapidly in a smoker than a  
[7] nonsmoker?  
[8] MR. HAINES: Object to form.  
[9] THE WITNESS: I believe that would be  
[10] true.  
[11] Q: (By Mr. Elliston) In fact, the  
[12] epidemiological studies by Dr. Selikoff, published  
[13] in the 1960s and 1970s, indicate that asbestosis  
[14] tends to progress more rapidly and become more  
[15] severe in smokers than nonsmokers, doesn't it?  
[16] A: I believe that's correct.  
[17] Q: Would you also agree, sir, that the risk  
[18] of GI-tract cancer in asbestos workers has not been  
[19] shown to be any greater than the general population  
[20] if they are non-smokers?  
[21] A: I can't answer that question.  
[22] Q: You would agree, sir, that at least for  
[23] laryngeal cancers, there has been no showing of an  
[24] excess risk of laryngeal cancer among asbestos  
[25] workers unless they are a smoker, wouldn't you?

Page 103

[1] A: I believe that's correct.  
[2] Q: Would you also agree, sir, that the  
[3] average latency period for mesothelioma is 35  
[4] years?  
[5] A: Somewhere in that neighborhood.  
[6] Q: Would you also agree, sir, that the  
[7] average latency period for lung cancer, if it is  
[8] related to asbestos, is in the range of 20 to 25  
[9] years?  
[10] A: I would think that would be correct. In  
[11] both of those, you're saying, average?  
[12] Q: Yes, sir, I am.  
[13] A: Okay. I agree with you.  
[14] Q: What is your opinion, sir, for the  
[15] average latency period for asbestosis?  
[16] A: That depends upon the dosage.  
[17] Q: Would you agree, sir, that the more  
[18] severe the dose or the exposure, the more rapid or  
[19] shorter the latency period?  
[20] A: The higher the exposure or the  
[21] concentration to the individual, the shorter the  
[22] latency period.  
[23] Q: Would you agree, sir, that throughout the  
[24] research and development of knowledge about  
[25] asbestos and its potential relationship or

Page

[1] association with lung cancer, there has been a  
[2] debate whether interstitial fibrosis or asbestosis  
[3] is necessary before there is an increased risk of  
[4] lung cancer in an asbestos-exposed individual?  
[5] A: That is correct.  
[6] Q: Would you also agree, sir, that if we  
[7] followed Dr. Selikoff's epidemiological research  
[8] back to 1968, when he first divided his workers  
[9] between smokers and nonsmokers, that all the way up  
[10] until 1979 Dr. Selikoff basically reported that  
[11] nonsmoking asbestos workers did not have an  
[12] increased risk of lung cancer above the general  
[13] population?  
[14] A: Give me the dates again. I'm not —  
[15] Q: Okay.  
[16] A: You're saying '79.  
[17] Q: I apologize. I'm getting too  
[18] shorthand, trying to shorthand this.  
[19] Would you agree, sir, that up until 1979,  
[20] throughout all of Dr. Selikoff's publications on  
[21] his research, Dr. Selikoff indicated that a  
[22] nonsmoking asbestos worker did not have an  
[23] increased risk of lung cancer above the general  
[24] population?  
[25] A: Could you just tell me what publication

Page

[1] in '79 you're referring to? Because I'm having —  
[2] that Selikoff stated that in? I'm trying to figure  
[3] out when —  
[4] MR. HAINES: He's asking you about  
[5] all the publications prior to '79. Whether  
[6] he said that or not —  
[7] Q: (By Mr. Elliston) Let me approach it  
[8] this way, Dr. Lemen. You would agree that in 1964  
[9] and '65 Dr. Selikoff did not divide those  
[10] insulation workers between smokers and nonsmokers,  
[11] did he?  
[12] A: Well, he wrote a paper — before '65?  
[13] Q: Yes. Stay with me for just a second.  
[14] A: Correct.  
[15] Q: I know you're trying to read, and I'm  
[16] going to try to break it out for us so we can get  
[17] there.  
[18] Would you agree, sir, that in his — at  
[19] the symposium and in the annals that were published  
[20] after the symposium, that Dr. Selikoff did not  
[21] distinguish between smokers and nonsmokers in his  
[22] cohort of insulators?  
[23] A: I believe that's correct.  
[24] Q: In 1968 Dr. Selikoff did divide the  
[25] workers between smokers and nonsmokers and

Page 106

(1) published the opinion that the nonsmokers did not  
(2) have an excess risk of lung cancer above the  
(3) general population?

(4) A: I believe that was his finding.

(5) Q: In 1972 he went to France, to an IARC  
(6) meeting, and again reported that nonsmokers  
(7) basically did not have an increased risk of lung  
(8) cancer over the general population, even though  
(9) they had been exposed to asbestos, didn't he?

(10) A: I believe that — you're talking about  
(11) his publication and the biological effects of —  
(12) yes, sir.

(13) Q: Then in 1976 he again presented his data  
(14) at the New York Academy of Science meeting and  
(15) again indicated that nonsmoking asbestos workers  
(16) did not have an increased risk of lung cancer above  
(17) the general population, didn't he?

(18) A: I'd have to go back to his paper, but  
(19) that's generally my recollection.

(20) Q: In any event, in 1979 Dr. Selikoff did  
(21) publish a paper indicating that, in his opinion,  
(22) that there was an increased risk of lung cancer  
(23) among nonsmoking asbestos workers that could be  
(24) somewhere between 1 and 9 and, therefore, they  
(25) selected 5 and published that as the increased risk

Page 107

(1) for a nonsmoking asbestos worker; isn't that true?

(2) A: What was the name of that paper? Can you  
(3) tell me which one?

(4) Q: I can't give you the title of the paper,  
(5) but it's my recollection, sir, that it was  
(6) published in the annals that were published that  
(7) year, the 1979 annals. I'd have to go back and  
(8) look. But the figure of 5 is certainly what he  
(9) reported. But I'm not sure of the exact era that  
(10) that was reported.

(11) Would you agree, sir, that in the paper  
(12) where they reported the five times increased risk  
(13) for nonsmoking asbestos workers, they also  
(14) indicated that the risk, in actuality, could be  
(15) anywhere between 1 and 9 because there were so few  
(16) nonsmoking asbestos workers who had developed lung  
(17) cancer?

(18) A: I think that's true.

(19) Q: In your opinion, sir, is there any safe  
(20) level or is there any known safe level to any  
(21) carcinogen?

(22) A: To any carcinogen?

(23) Q: Yes, sir.

(24) A: Well, we certainly put recommendations in  
(25) our criteria documents, RELs, recommended exposure

Page 108

(1) limits. And there possibly are safe levels, but I  
(2) can't quantify them for you.

(3) Q: Fair enough. Let me rephrase my question  
(4) for you.

(5) Would you agree, sir, that medical  
(6) science today cannot identify a safe level for any  
(7) carcinogen?

(8) A: For all individuals I believe that's  
(9) true. Because of the — there are many factors  
(10) that go into an individual's susceptibility, et  
(11) cetera, so I believe I would have to answer your  
(12) question yes.

(13) Q: In using that criteria, there is no known  
(14) safe level to automobile exhaust that we encounter  
(15) every day, is there?

(16) A: Not for all individuals, that's correct.

(17) Q: You would also agree, sir, there's no  
(18) safe level to — of exposure to cigarette smoke,  
(19) whether direct or indirect, isn't that true?

(20) A: Yes.

(21) Q: Sir, isn't it true that whether dust is  
(22) actually visible to the individual depends on a lot  
(23) of things, including the light in the area, how  
(24) large the particles are and what type of particles  
(25) they are, things of that nature?

Page 109

(1) A: I would agree with that.

(2) Q: Would you also agree, sir, that the  
(3) exposure that an individual receives from dust will  
(4) depend a lot on the wind or the ventilation in that  
(5) area?

(6) A: Those all have effects, yes, sir.

(7) Q: And would you agree, sir, as to whether  
(8) someone truly has an exposure above the threshold  
(9) level or permissible exposure level will depend not  
(10) just on how much dust they see but, in addition to  
(11) how long they're in the area, how close they are to  
(12) the operation, ventilation, things of that nature?

(13) A: I would agree.

(14) Q: Sir, have you published any opinions or  
(15) criticisms of the filter, the fit, the marketing,  
(16) the design or the manufacture of any type of  
(17) respiratory protective device or mask?

(18) A: I have not personally published. I have  
(19) worked on respirator test programs and so forth in  
(20) NIOSH recommendations, but they are not my  
(21) publications, they're NIOSH publications.

(22) Q: Have you published any opinions or  
(23) criticisms of any specific brand or type of  
(24) respirator or mask yourself?

(25) A: Again, not personally, no, sir.

Page 110

Page

[1] Q: Do you claim to be an expert in the  
[2] manufacture, design or marketing of respiratory  
[3] protective devices?  
[4] A: No, sir.  
[5] MR. ELLISTON: Why don't we take a  
[6] quick break.  
[7] (Recess taken.)  
[8] Q: (By Mr. Elliston) Sir, what is your best  
[9] estimate of your total income in 1998 from your  
[10] work testifying and consulting in the asbestos  
[11] litigation?  
[12] A: Just as pertains to asbestos?  
[13] Q: Yes, sir.  
[14] A: I'd have to go to my accountant, but I  
[15] think that I — after expenses and paying taxes  
[16] and — is that — what are you talking about, gross  
[17] or —  
[18] Q: Yes, sir. Let's — I don't want to get  
[19] into all your expenses. What was your gross  
[20] income, your best estimate, from consulting and  
[21] testifying in asbestos litigation in 1998?  
[22] A: A little over \$100,000.  
[23] Q: Sir, I noticed in your designation there  
[24] was a mention of smoking. Would you agree that  
[25] smoking causes 30 to 35 percent of all cancer in

[1] Q: I'm sorry. Would you agree, sir, that  
[2] the U.S. Surgeon General reports that tobacco smoke  
[3] contains 43 different carcinogens?  
[4] A: Somewhere in that neighborhood. I'd have  
[5] to go back and look at the Surgeon General's  
[6] report, which I have a copy of. But it contains  
[7] multiple carcinogens. And if 43 is the number,  
[8] I'll take your word for it.  
[9] Q: Would you agree, sir, that the  
[10] U.S. Public Health Service recommended warnings on  
[11] tobacco products in the mid '60s?  
[12] A: I believe that's correct.  
[13] Q: Have you ever drafted or prepared a  
[14] warning or instruction or label for any type of  
[15] product that was actually placed in the stream of  
[16] customers?  
[17] A: When I was director of the Division of  
[18] Standards Development and Technology Transfer. And  
[19] when I co-wrote the criteria document that John  
[20] Dement and I did in 1976, we had — well, we didn't  
[21] include it there, but I worked on the 1972  
[22] recommendation. And then all the criteria  
[23] documents under my supervision that were put out  
[24] between 1981 and of 1987 that contained warning  
[25] labels, yes, I had a hand in writing those.

Page 111

Page

[1] America, cancer deaths in America?  
[2] A: I think it's the biggest cause of cancer  
[3] deaths in the United States. I don't want to put a  
[4] percentage on it because I'm not sure.  
[5] Q: Are you aware, sir, whether the  
[6] U.S. Surgeon General has estimated that smoking  
[7] causes over 30 percent of all cancer deaths in  
[8] America?  
[9] A: I agree with that. I'm just not wanting  
[10] to put a finite number. But I certainly think that  
[11] smoking is the greatest cause of lung cancer in the  
[12] world, probably.  
[13] Q: Okay. You've answered a little  
[14] differently than I asked. So, in fairness to you,  
[15] I'll divide it up. Would you agree that smoking  
[16] has been shown to be a cause of 87 percent or more  
[17] of all lung cancer deaths?  
[18] A: I would agree with that.  
[19] Q: Would you agree that smoking has been  
[20] shown to be a cause of 30 percent or more of all  
[21] cancer deaths in America?  
[22] A: Again, I can't answer that exactly, but I  
[23] think that's somewhere in the neighborhood. I'd  
[24] have to go back to the Surgeon General's report and  
[25] do that.

[1] Q: Let me divide this up for us.  
[2] Have you, as an individual and private  
[3] citizen, ever drafted or prepared a warning  
[4] instruction or label for any type of product that  
[5] was placed in the stream of customers?  
[6] A: No.  
[7] Q: Even while you were at NIOSH, did NIOSH  
[8] ever recommend any instructions or labels for any  
[9] individual products?  
[10] A: You mean like, for example, Armstrong  
[11] ceiling tile? Would that be an example of a  
[12] specific product?  
[13] Q: Yes, sir, it would.  
[14] A: Ours were generic recommendations, so the  
[15] answer would be no.  
[16] Q: Did NIOSH — I understand NIOSH  
[17] recommended warnings be placed on certain types of  
[18] products; is that correct?  
[19] A: That's correct.  
[20] Q: Did NIOSH go further than that and  
[21] recommend labeling or instructions for various  
[22] products?  
[23] A: They gave generic label instructions in  
[24] their criteria documents. I don't think we, when I  
[25] was at NIOSH, we ever made a specific label for a

Page 114

[1] specific product, if that's what you're asking.

[2] **MR. ELLISTON:** I'll pass the witness.

[3] Thank you, sir.

[4] **MS. SIENI:** No questions.

[5] **CROSS-EXAMINATION**

[6] **BY MR. BAHR:**

[7] **Q:** Doctor, my name is Kevin Bahr. I

[8] represent Kelly Moore.

[9] Based on your review of the materials  
[10] furnished to you by the plaintiffs' attorneys in  
[11] this case, are you aware of the nature and  
[12] circumstances surrounding plaintiffs' alleged  
[13] exposure to joint compounds?

[14] **A:** Other than the material that I was given?

[15] **Q:** Correct.

[16] **A:** No.

[17] **Q:** Can you tell us what your awareness is  
[18] regarding plaintiff's exposure to joint compounds  
[19] based on what you have reviewed?

[20] **A:** Just that he was exposed, but I don't  
[21] know concentrations or anything of that nature.

[22] **Q:** Have you reviewed any materials or  
[23] documents or depositions of corporate  
[24] representatives concerning anything related to  
[25] Kelly Moore?

Page 115

[1] **A:** Not to my knowledge.

[2] **Q:** You personally haven't conducted or  
[3] reviewed any industrial hygiene studies regarding  
[4] any fiber release issues concerning products  
[5] manufactured by Kelly Moore?

[6] **A:** No.

[7] **MR. BAHR:** Those are all my  
[8] questions. Thank you.

[9] **MR. HAINES:** Did you have some  
[10] questions?

[11] **MR. HARTON:** Well, actually, what  
[12] I've done, just so you'll know, is I've  
[13] sent the notebook down to be copied. If I  
[14] can get the notebook back up, that way I  
[15] will have a copy, I can just use that at  
[16] trial. And that's going to make it a lot  
[17] easier than me running back through those  
[18] articles, if that's all right. And that's  
[19] what I've done. Therefore, about the only  
[20] thing I've got is I've asked people to  
[21] make — find a copy of the Brachmann  
[22] article. Remember that? And if you want a  
[23] copy of this, I'll make it for you. But I  
[24] think earlier we said — believed it to be  
[25] a manufacturing facility. I think the

Page 116

[1] first paragraph shows that, yeah, it was a

[2] brake manufacturing plant as opposed to end  
[3] users. That's the 19 —

[4] **THE WITNESS:** Yeah, that's consistent

[5] with what I remember. I would like to have

[6] a copy because — I'm sure I've got one,

[7] but it would be easier if I could — since

[8] I've given you copies.

[9] **MR. HARTON:** And I think that's

[10] all — yeah, yeah. I mean, those are all

[11] the questions I have. I don't know if

[12] anyone has anything else.

[13] **MR. HAINES:** I've just got a couple

[14] of follow-ups if you all are all done.

[15] **DIRECT EXAMINATION**

[16] **BY MR. HAINES:**

[17] **Q:** Dr. Lemen, I want to clear up a couple of  
[18] points, make sure we're clear on. Earlier today we  
[19] were talking about the criteria document in 1972  
[20] and in '76, and you were attempting to explain one  
[21] of your answers about technological feasibility and  
[22] the levels. Please explain to me what happened in  
[23] 1976 with regard to technological feasibility and  
[24] the standard that was recommended in that criteria  
[25] document.

Page 117

[1] **A:** The standard that was recommended in the  
[2] 1976 criteria document was based upon the  
[3] statistical abilities of the NIOSH analytical  
[4] method for counting fibers in an environment — in  
[5] an environment containing asbestos and the ability  
[6] to statistically have a reliable concentration that  
[7] you could rely upon. And the lowest concentration  
[8] at that time that we could determine was 0.1  
[9] fibers. And we stated that even at that  
[10] concentration there may be disease, which we know  
[11] now from doing risk assessment we project that  
[12] there is a risk of developing disease at or below  
[13] the concentration.

[14] **Q:** In 1972 or in 1976, was it ever thought,  
[15] by the NIOSH or by yourself in your capacity  
[16] working for NIOSH, that that level of .1 would  
[17] entirely prevent cancer from arising from asbestos  
[18] exposure?

[19] **MR. ELLISTON:** Objection, form.

[20] **THE WITNESS:** Well, the .1 didn't  
[21] come into existence until 1976, and it  
[22] wasn't after that period of time, that's  
[23] true.

[24] **Q:** (By Mr. Haines) I'm sorry. It wasn't  
[25] after what time?

Page 118

Page

[1] A: I was first recommended by NIOSH in  
[2] 1976, and subsequent to that and at that time it  
[3] was never stated that it would completely reduce  
[4] the risk, but it would substantially lower the  
[5] risk, in our opinion.  
[6] Q: Right. With regard to some of these  
[7] articles that discuss the manufacturing of brake  
[8] parts, such as this Brachmann article in 1940 which  
[9] discusses grinders and drillers of brake bands, can  
[10] you discuss for us why that would be relevant or  
[11] applicable to end users? What is the significance  
[12] of an article like this in the context of an end  
[13] user brake mechanic?  
[14] MR. ELLISTON: Object, form.  
[15] THE WITNESS: I believe that it shows  
[16] that when working with the brake lining,  
[17] drilling holes in it or grinding it, that  
[18] there could be exposure. So that's  
[19] strictly applicable if somebody were  
[20] grinding or drilling as an end-product user  
[21] of the material.  
[22] MR. HAINES: That's all the questions  
[23] I have for you. Thank you.  
[24] MR. HARTON: One. I'm following up  
[25] on that.

[1] A: There may be some, but I'm not aware of  
[2] them.  
[3] MR. ELLISTON: That's all I have.  
[4] Thank you.  
[5] (Deposition concluded at 11:50 a.m.)  
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Page 119

Page

RECROSS-EXAMINATION

BY MR. HARTON:

[1] Q: Do you know, based on your review of the  
[2] Raper testimony, if he ever either ground or  
[3] drilled any brake linings?  
[4] A: I don't know.  
[5] MR. HARTON: Okay, thanks.  
[6] MR. FALK: I just have one follow-up  
[7] also.

RECROSS-EXAMINATION

BY MR. FALK:

[1] Q: Are you aware of any studies or  
[2] industrial hygiene surveys concerning exposure  
[3] levels while working on aircraft brakes?  
[4] A: I haven't seen any.  
[5] Q: Do you know if the brakes on the aircraft  
[6] that Mr. Raper worked on even contained asbestos?  
[7] A: No, I don't know that.  
[8] MR. FALK: Thank you.  
[9] MR. ELLISTON: One last question.  
[10] RECROSS-EXAMINATION  
[11] BY MR. ELLISTON:  
[12] Q: Sir, are you aware of any fiber release  
[13] studies or testing that has been done related to  
[14] friction products used on cranes, overhead cranes?  
[15]  
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INDEX TO EXAMINATIONS

| Examination                         | Page |
|-------------------------------------|------|
| Cross-Examination by Mr. Harton     | 5    |
| Cross-Examination by Mr. Falk       | 50   |
| Cross-Examination by Mr. Gustafson  | 67   |
| Cross-Examination by Mr. Johnson    | 70   |
| Cross-Examination by Mr. Elliston   | 74   |
| Cross-Examination by Mr. Bahr       | 114  |
| Direct Examination by Mr. Haines    | 116  |
| Recross-Examination by Mr. Harton   | 119  |
| Recross-Examination by Mr. Falk     | 119  |
| Recross-Examination by Mr. Elliston | 120  |

Page 122

Page 123

INDEX TO EXHIBITS

Defendant's

| Exhibit | Description                                                    | Page |
|---------|----------------------------------------------------------------|------|
| 1       | Notice of Taking Deposition                                    | 5    |
| 2       | CV                                                             | 7    |
| 3       | Medical File on Kenneth Raper                                  | 8    |
| 4       | Time Line                                                      | 15   |
| 5       | Medical Reports and Depositions of<br>Mr. Raper and Co-Workers | 15   |

(Original Exhibits 1 - 3 and 5 and photocopies  
of Exhibit 4 have been attached to the original  
transcript.

STATE OF GEORGIA:  
COUNTY OF FULTON:

I hereby certify that the foregoing transcript  
was reported, as stated in the caption, and the  
questions and answers thereto were reduced to  
typewriting under my direction; that the foregoing  
pages 1-123 represent a true, complete, and correct  
transcript of the evidence given upon said hearing,  
and I further certify that I am not of kin or  
counsel to the parties in the case; am not in the  
employ of counsel for any of said parties; nor am I  
in anywise interested in the result of said case.  
Disclosure Pursuant to O.C.G.A. 9-11-28(d): The  
party taking this deposition will receive the  
original and one copy based on our standard and  
customary per page charges. Copies to other  
parties will be furnished based on our standard and  
customary per page charges. Incidental direct  
expenses of production may be added to either party  
where applicable. Our customary appearance fee  
will be charged to the party taking this  
deposition.

This, the 18th day of March, 1999.

Diane M. Bachus, RPR, CCR #B-2089  
My Commission Expires on the  
16th Day of August, 2002

## Lawyer's Notes

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|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
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| #                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 1941 37:21, 21<br>1942 94:2, 2<br>1943 41:16, 16<br>1946 101:1, 1<br>1950s 93:10; 94:7; 95:20;<br>93:10; 94:7; 95:20<br>1952 41:17; 75:24; 76:1;<br>41:17; 75:24; 76:1<br>1957 42:25, 25<br>1958 79:11, 11<br>1960 41:14, 19, 20, 25;<br>42:5; 75:20; 41:14, 19, 20,<br>25; 42:5; 75:20<br>1960s 93:10; 94:8; 95:7;<br>17, 20; 102:13; 93:10;<br>94:8; 95:7, 17, 20; 102:13<br>1964 105:8, 8<br>1965 19:23; 20:25; 21:12;<br>33:20; 34:6, 7, 9; 39:10;<br>94:14; 19:23; 20:25;<br>21:12; 33:20; 34:6, 7, 9;<br>39:10; 94:14<br>1968 104:8; 105:24;<br>104:8; 105:24<br>1970 74:18, 18<br>1970s 39:25; 40:24;<br>89:25; 94:11; 95:2, 7, 17,<br>21; 96:2, 8; 102:13; 39:25;<br>40:24; 89:25; 94:11; 95:2,<br>7, 17, 21; 96:2, 8; 102:13<br>1972 76:6, 10, 16; 77:18;<br>78:2, 6, 12, 20, 25; 79:24;<br>80:8; 88:1, 16, 22; 92:2;<br>106:5; 112:21; 116:19;<br>117:14; 76:6, 10, 16;<br>77:18; 78:2, 6, 12, 20, 25;<br>79:24; 80:8; 88:1, 16, 22;<br>92:2; 106:5; 112:21;<br>116:19; 117:14<br>1973 43:6, 6<br>1975 19:1, 6; 29:24;<br>89:25; 19:1, 6; 29:24;<br>89:25<br>1976 19:14, 17; 40:9;<br>90:6; 92:8; 106:13;<br>112:20; 116:23; 117:2, 14,<br>21; 118:2; 19:14, 17; 40:9;<br>90:6; 92:8; 106:13;<br>112:20; 116:23; 117:2, 14,<br>21; 118:2<br>1977 43:15, 15<br>1979 104:10, 19; 106:20;<br>107:7; 104:10, 19; 106:20;<br>107:7<br>1980s 59:14; 66:13;<br>95:17; 59:14; 66:13; 95:17<br>1981 112:24, 24<br>1985 86:20, 24, 20, 24<br>1986 71:16; 72:1; 71:16;<br>72:1<br>1987 112:24, 24<br>1989 9:8, 8<br>1992 91:19, 19<br>1994 58:10, 10<br>1996 56:10; 74:19; 56:10;<br>74:19 | 1998 9:16; 71:16; 110:9;<br>21; 9:16; 71:16; 110:9, 21<br>1999 28:19; 30:24;<br>123:22; 28:19; 30:24;<br>123:22                                                      | 42:18; 43:5; 84:22<br>72 76:13; 91:23, 24;<br>76:13; 91:23, 24<br>7400 45:4, 18, 4, 18<br>75 96:18, 18<br>76 116:20, 20<br>79 104:16; 105:1, 5;<br>104:16; 105:1, 5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 108:22; 112:15; 115:1<br>8:13; 15:13; 23:8; 40:5<br>43:10; 64:25; 74:20;<br>75:23; 76:15; 108:22;<br>112:15; 115:11<br>add 30:15, 15<br>added 7:4, 7; 123:18;<br>7; 123:18<br>adding 44:23, 23<br>addition 44:6; 109:10<br>44:6; 109:10<br>additional 85:23; 92;<br>85:23; 92:3<br>additions 6:23; 7:1; 6<br>7:1<br>address 91:19, 19<br>addressed 75:14, 14<br>addressing 80:9, 9<br>adhesives 87:13, 17,<br>17<br>adopted 32:7, 7<br>Advisory 7:5, 5<br>advocate 95:6, 6<br>advocated 93:24; 94:<br>11; 95:2; 93:24; 94:6, 1<br>95:2<br>aerosol 48:5; 59:20;<br>48:5; 59:20<br>affect 48:5, 5<br>Africa 23:8; 42:6; 43:1<br>23:8; 42:6; 43:17<br>again 36:21; 69:14; 85:<br>87:20; 97:13; 99:6, 10;<br>100:14; 101:8; 104:14;<br>106:6, 13, 15; 109:25;<br>111:22; 36:21; 69:14;<br>85:5; 87:20; 97:13; 99:<br>10; 100:14; 101:8; 104:<br>106:6, 13, 15; 109:25;<br>111:22<br>against 92:5; 93:6, 7;<br>92:5; 93:6, 7<br>agency 68:21, 21; 69:<br>68:21, 21; 69:4<br>agent 57:6, 6<br>agents 48:4, 9, 4, 9<br>ago 16:17; 24:2; 58:14<br>16:17; 24:2; 58:14<br>agree 21:16; 22:4, 12;<br>28:6; 29:16; 30:24; 33:1<br>35:12, 22; 36:19; 46:14<br>51:14, 17; 52:13, 15;<br>56:17; 57:4, 8, 9; 66:11;<br>74:9; 78:6; 79:23; 80:7;<br>86:7; 87:16; 88:8, 14;<br>89:21; 90:2; 91:8; 93:4,<br>22; 94:5; 96:17, 24; 97:<br>7; 102:2, 5, 17, 22; 103:<br>6, 13, 17, 23; 104:6, 19;<br>105:8, 18; 107:11; 108:<br>17; 109:1, 2, 7, 13; 110:<br>111:9, 15, 18, 19; 112:1<br>21:16; 22:4, 12; 28:6;<br>29:16; 30:24; 33:15;<br>35:12, 22; 36:19; 46:14<br>51:14, 17; 52:13, 15;<br>56:17; 57:4, 8, 9; 66:11 |
| \$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 2                                                                                                                                                                    | 8                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| \$1,500 15:19, 19<br>\$100,000 110:22, 22<br>\$300 15:20, 20                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 2 7:21; 57:19; 7:21; 57:19<br>2/18/98 8:14, 14<br>20 16:17; 24:2; 103:8;<br>16:17; 24:2; 103:8<br>2002 123:25, 25<br>200th 74:14, 14<br>25 103:8, 8<br>250 15:20, 20 | 8 12:17; 43:8; 12:17; 43:8<br>80's 32:12, 12<br>80s 32:14, 18; 39:25;<br>32:14, 18; 39:25<br>87 111:16, 16                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| 0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 3                                                                                                                                                                    | 9                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| 0.1 92:11; 117:8; 92:11;<br>117:8<br>01 31:23; 32:6; 31:23;<br>32:6                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 3 8:7, 9; 34:1; 8:7, 9; 34:1<br>30 110:25; 111:7, 20;<br>110:25; 111:7, 20<br>30's 93:24, 24<br>35 103:3; 110:25; 103:3;<br>110:25<br>3M 82:6, 8, 6, 8               | 9 13:17; 15:7; 106:24;<br>107:15; 13:17; 15:7;<br>106:24; 107:15<br>9-11-28(d) 123:12, 12<br>92 91:22, 24, 22, 24<br>97 25:24; 52:17; 25:24;<br>52:17<br>98 6:19; 10:10, 15, 22, 24;<br>52:17; 6:19; 10:10, 15, 22,<br>24; 52:17<br>99 10:10, 15, 25, 10, 15,<br>25                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 4                                                                                                                                                                    | A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| 1 5:1; 6:9; 31:3; 61:3; 64:2;<br>74:18; 106:24; 107:15;<br>117:16, 20; 118:1; 5:1; 6:9;<br>31:3; 61:3; 64:2; 74:18;<br>106:24; 107:15; 117:16,<br>20; 118:1<br>1-123 123:6, 6<br>1.5 57:17, 17<br>10 14:12, 12<br>11 33:12, 12<br>11/24/98 8:14, 14<br>11:50 120:5, 5<br>12 15:22; 16:3; 15:22;<br>16:3<br>128 61:14, 20; 62:9, 17;<br>61:14, 20; 62:9, 17<br>129 63:9, 9<br>15 16:17; 47:9; 16:17;<br>47:9<br>155 65:8, 8<br>16 9:19, 19<br>16th 123:25, 25<br>1798 74:11, 11<br>1800s 85:15, 15<br>18th 123:22, 22<br>19 74:18; 116:3; 74:18;<br>116:3<br>1918 98:6, 16, 6, 16<br>1930 97:9, 9<br>1930s 75:2, 15; 94:7;<br>96:8; 75:2, 15; 94:7; 96:8<br>1935 34:25; 35:5; 36:11;<br>98:19, 24; 99:5; 34:25;<br>35:5; 36:11; 98:19, 24;<br>99:5<br>1938 99:13; 100:6; 99:13;<br>100:6<br>1939 37:10, 10<br>1940 37:17; 118:8; 37:17;<br>118:8<br>1940s 93:9; 94:7; 93:9;<br>94:7 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 4 15:4, 7; 17:22; 29:23;<br>46:6, 15; 15:4, 7; 17:22;<br>29:23; 46:6, 15<br>40s 93:24, 24<br>43 112:3, 7, 3, 7                                                       | a.m 120:5, 5<br>abatement 31:20; 32:1,<br>7; 31:20; 32:1, 7<br>abilities 117:3, 3<br>ability 32:9; 117:5; 32:9;<br>117:5<br>able 26:11; 38:10; 26:11;<br>38:10<br>above 65:11; 79:20;<br>88:25; 104:12, 23; 106:2,<br>16; 109:8; 65:11; 79:20;<br>88:25; 104:12, 23; 106:2,<br>16; 109:8<br>abstract 38:16, 16<br>Academy 40:10; 94:14;<br>95:6; 106:14; 40:10;<br>94:14; 95:6; 106:14<br>accept 45:8, 8<br>acceptable 56:25, 25<br>accompanied 67:13, 13<br>accountant 110:14, 14<br>ACGIH 53:19, 19<br>achieving 76:21, 21<br>Act 39:6; 76:1; 39:6; 76:1<br>activity 17:1, 1<br>actuality 107:14, 14<br>actually 8:13; 15:13;<br>23:8; 40:5; 43:10; 64:25;<br>74:20; 75:23; 76:15; |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 5                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 6                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 7                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

74:9; 78:6; 79:23; 80:7;  
86:7; 87:16; 88:8, 14;  
89:21; 90:2; 91:8; 93:4, 9,  
22; 94:5; 96:17, 24; 97:2,  
7; 102:2, 5, 17, 22; 103:2,  
6, 13, 17, 23; 104:6, 19;  
105:8, 18; 107:11; 108:5,  
17; 109:1, 2, 7, 13; 110:24;  
111:9, 15, 18, 19; 112:1, 9  
**agreement** 5:12, 12  
**ahead** 5:23; 58:7; 70:25;  
5:23; 58:7; 70:25  
**air** 16:22; 22:12, 15, 24;  
23:23; 31:20, 21; 32:2;  
43:22; 44:9, 21, 24; 45:17;  
79:14; 16:22; 22:12, 15,  
24; 23:23; 31:20, 21; 32:2;  
43:22; 44:9, 21, 24; 45:17;  
79:14  
**aircraft** 69:4; 93:13, 20;  
119:14, 16; 69:4; 93:13,  
20; 119:14, 16  
**Airfield** 51:7, 7  
**airline** 50:19, 22, 25;  
51:1; 68:19; 50:19, 22, 25;  
51:1; 68:19  
**Airport** 51:6, 6  
**alleged** 114:12, 12  
**Allied** 50:13, 15, 13, 15  
**Allison** 52:20, 20  
**alluded** 95:23, 23  
**almost** 100:9, 9  
**alone** 91:12, 12  
**along** 11:23, 23  
**alternate** 68:14, 14  
**always** 43:24; 44:15;  
43:24; 44:15  
**ambient** 22:12, 24; 23:23;  
51:17; 22:12, 24; 23:23;  
51:17  
**amended** 6:9, 9  
**America** 111:1, 1, 8, 21,  
1, 1, 8, 21  
**American** 25:22; 56:11;  
25:22; 56:11  
**among** 17:7; 37:24;  
50:25; 56:8; 61:15, 24;  
62:10, 18; 102:24; 106:23;  
17:7; 37:24; 50:25; 56:8;  
61:15, 24; 62:10, 18;  
102:24; 106:23  
**amount** 17:18; 18:1, 17;  
19:4, 21; 20:3; 46:9, 11,  
20; 47:4; 17:18; 18:1, 17;  
19:4, 21; 20:3; 46:9, 11,  
20; 47:4  
**amphibole** 33:1; 56:9,  
15; 33:1; 56:9, 15  
**amphibole-type** 55:2, 2  
**amphiboles** 25:19; 26:8;  
5:19; 26:8  
**analogy** 56:20, 20  
**analysis** 63:10, 16, 10,  
6  
**analytical** 45:4; 117:3;  
5:4; 117:3

**analyze** 40:8; 63:11;  
40:8; 63:11  
**Anderson-Lillis** 90:6, 6  
**animal** 51:12; 55:13, 14,  
18; 51:12; 55:13, 14, 18  
**animals** 55:23, 23  
**annals** 94:13, 19; 105:19;  
107:6, 7; 94:13, 19;  
105:19; 107:6, 7  
**anniversary** 74:14, 14  
**answered** 43:21; 111:13;  
43:21; 111:13  
**anticipate** 49:10; 50:2;  
49:10; 50:2  
**anticipated** 50:5, 5  
**anymore** 26:25; 51:25;  
75:10; 26:25; 51:25; 75:10  
**anywise** 123:11, 11  
**apart** 61:1, 1  
**apologize** 104:17, 17  
**appearance** 123:19, 19  
**appeared** 40:5, 7; 43:7;  
76:19; 77:5; 40:5, 7; 43:7;  
76:19; 77:5  
**appears** 77:14, 14  
**appendix** 76:19, 19  
**applicable** 118:11, 19;  
123:19; 118:11, 19;  
123:19  
**applicators** 89:11, 11  
**applies** 37:4, 4  
**applying** 73:10; 89:16;  
73:10; 89:16  
**appreciate** 28:14; 83:11;  
28:14; 83:11  
**approach** 105:7, 7  
**approximately** 96:15,  
18, 15, 18  
**arbitrarily** 57:19, 19  
**area** 42:22; 44:8; 45:12,  
12; 52:2; 53:5, 9, 12;  
63:22; 73:12, 12; 108:23;  
109:5, 11; 42:22; 44:8;  
45:12, 12; 52:2; 53:5, 9,  
12; 63:22; 73:12, 12;  
108:23; 109:5, 11  
**areas** 49:5; 54:7, 10;  
49:5; 54:7, 10  
**arise** 53:13, 13  
**arising** 117:17, 17  
**Armstrong** 81:3, 3; 83:1,  
2; 85:9, 10, 14, 14; 86:10,  
10; 113:10; 81:3, 3; 83:1,  
2; 85:9, 10, 14, 14; 86:10,  
10; 113:10  
**arose** 53:4, 4  
**around** 19:4; 23:3, 11;  
32:14; 41:14; 47:9; 51:1;  
60:23; 70:23; 71:22;  
72:10; 73:12; 89:24; 19:4;  
23:3, 11; 32:14; 41:14;  
47:9; 51:1; 60:23; 70:23;  
71:22; 72:10; 73:12; 89:24  
**article** 19:10, 14, 16, 17;  
35:23; 36:6, 10, 11; 37:9,

17; 39:3; 42:23; 43:7;  
58:10, 12, 13; 59:2, 5;  
60:19, 22; 61:8, 15, 19;  
63:6; 64:2; 65:8; 66:24;  
67:1, 11, 13; 115:22;  
118:8, 12; 19:10, 14, 16,  
17; 35:23; 36:6, 10, 11;  
37:9, 17; 39:3; 42:23; 43:7;  
58:10, 12, 13; 59:2, 5;  
60:19, 22; 61:8, 15, 19;  
63:6; 64:2; 65:8; 66:24;  
67:1, 11, 13; 115:22;  
118:8, 12  
**articles** 12:25; 13:1, 10;  
15:8; 18:25; 33:24; 34:17;  
38:1, 12; 39:7, 11, 22;  
46:5; 48:14, 22; 50:8;  
52:16, 23; 56:1; 60:19;  
61:5; 115:18; 118:7;  
12:25; 13:1, 10; 15:8;  
18:25; 33:24; 34:17; 38:1,  
12; 39:7, 11, 22; 46:5;  
48:14, 22; 50:8; 52:16, 23;  
56:1; 60:19; 61:5; 115:18;  
118:7  
**asbestos** 14:5; 16:23;  
17:14, 14, 18; 18:17; 19:4,  
11, 22; 20:3; 22:10, 15, 17,  
24; 23:2, 3, 11, 19; 24:21;  
25:2, 5, 19, 20, 21; 26:22;  
28:20, 24; 29:1, 7, 10, 19;  
30:7, 25; 32:3, 9; 33:1, 9,  
15, 17; 36:1, 2; 41:13, 17,  
23; 42:1; 43:16; 44:8, 21;  
46:20; 48:1, 6, 10; 50:21;  
51:3; 60:4; 63:18, 22;  
71:23; 72:2, 7, 25; 73:1,  
10, 13, 19, 23; 75:1, 14,  
20; 76:6; 78:4, 8, 11, 13,  
19; 79:4, 12, 20; 82:8;  
86:19, 24; 88:1, 11, 15, 25;  
90:4; 91:10; 93:12, 19, 25;  
94:4, 7, 11; 95:2, 7, 16, 21;  
96:1, 11; 97:1, 5, 8, 15;  
98:10, 15; 99:8, 15;  
101:17; 102:18, 24; 103:8,  
25; 104:11, 22; 106:9, 15,  
23; 107:1, 13, 16; 110:10,  
12, 21; 117:5, 17; 119:17;  
14:5; 16:23; 17:14, 14, 18;  
18:17; 19:4, 11, 22; 20:3;  
22:10, 15, 17, 24; 23:2, 3,  
11, 19; 24:21; 25:2, 5, 19,  
20, 21; 26:22; 28:20, 24;  
29:1, 7, 10, 19; 30:7, 25;  
32:3, 9; 33:1, 9, 15, 17;  
36:1, 2; 41:13, 17, 23;  
42:1; 43:16; 44:8, 21;  
46:20; 48:1, 6, 10; 50:21;  
51:3; 60:4; 63:18, 22;  
71:23; 72:2, 7, 25; 73:1,  
10, 13, 19, 23; 75:1, 14,  
20; 76:6; 78:4, 8, 11, 13,  
19; 79:4, 12, 20; 82:8;  
86:19, 24; 88:1, 11, 15, 25;  
90:4; 91:10; 93:12, 19, 25;  
94:4, 7, 11; 95:2, 7, 16, 21;  
96:1, 11; 97:1, 5, 8, 15;  
98:10, 15; 99:8, 15;  
101:17; 102:18, 24; 103:8,  
25; 104:11, 22; 106:9, 15,

23; 107:1, 13, 16; 110:10,  
12, 21; 117:5, 17; 119:17  
**asbestos-related** 34:12,  
12  
**asbestos-exposed**  
104:4, 4  
**asbestos-related** 22:5,  
25; 23:24; 26:2; 39:21;  
63:12; 66:15; 68:23; 69:5;  
72:16; 89:23; 90:5; 91:4, 5,  
17; 92:6, 24; 22:5, 25;  
23:24; 26:2; 39:21; 63:12;  
66:15; 68:23; 69:5; 72:16;  
89:23; 90:5; 91:4, 5, 17;  
92:6, 24  
**asbestosis** 37:24; 43:6,  
10; 80:9; 91:4; 93:6;  
100:11; 102:13; 103:15;  
104:2; 37:24; 43:6, 10;  
80:9; 91:4; 93:6; 100:11;  
102:13; 103:15; 104:2  
**aspect** 65:9, 9  
**assessment** 117:11, 11  
**assigning** 57:19, 19  
**associate** 57:6, 6  
**associated** 61:16, 25;  
62:19; 101:17; 61:16, 25;  
62:19; 101:17  
**association** 24:8; 55:21;  
63:11, 16; 104:1; 24:8;  
55:21; 63:11, 16; 104:1  
**associations** 41:8, 8  
**assume** 33:19, 19  
**assumed** 44:15, 15  
**at-risk** 69:5, 5  
**Atlanta** 22:13, 18, 20;  
23:17; 22:13, 18, 20; 23:17  
**atmosphere** 44:11, 11  
**attached** 48:10, 10  
**attachments** 6:13, 13  
**attempt** 17:18; 19:3;  
21:20; 22:23; 24:4, 5, 8, 9;  
29:3; 34:4; 17:18; 19:3;  
21:20; 22:23; 24:4, 5, 8, 9;  
29:3; 34:4  
**attempted** 23:22; 24:1;  
42:11; 23:22; 24:1; 42:11  
**attempting** 20:2; 26:3;  
35:20; 116:20; 20:2; 26:3;  
35:20; 116:20  
**attempts** 60:15, 15  
**attorney** 90:17, 17  
**attorneys** 20:17; 114:10;  
20:17; 114:10  
**attributed** 42:15, 15  
**August** 7:10; 9:14, 16;  
19:1, 6; 29:24; 123:25;  
7:10; 9:14, 16; 19:1, 6;  
29:24; 123:25  
**Austin** 10:6, 6  
**author** 40:11; 67:5;  
40:11; 67:5  
**author's** 58:16, 16  
**authority** 77:11, 18, 11,  
18  
**authors** 53:22; 59:5;

53:22; 59:5  
**auto** 16:14; 17:2; 16:14;  
17:2  
**automobile** 16:19, 21;  
20:25; 21:11; 57:23;  
108:14; 16:19, 21; 20:25;  
21:11; 57:23; 108:14  
**automotive** 61:9; 62:11;  
90:12, 13; 61:9; 62:11;  
90:12, 13  
**available** 77:23, 23  
**average** 31:4; 47:4, 8;  
103:3, 7, 11, 15; 31:4;  
47:4, 8; 103:3, 7, 11, 15  
**aware** 7:20; 28:4, 5;  
31:16, 19; 33:4; 57:22;  
59:11, 16; 60:15; 67:10;  
68:25; 69:2; 72:9; 78:8, 12,  
17; 79:10; 80:13; 88:4, 5;  
89:9, 14; 91:2; 95:1, 11; 115;  
119:11; 119:12, 23; 120:1;  
7:20; 28:4, 5; 31:16, 19;  
33:4; 57:22; 59:11, 16;  
60:15; 67:10; 68:25; 69:2;  
72:9; 78:8, 12, 17; 79:10;  
80:13; 88:4, 5; 89:9, 14;  
91:2; 95:1, 11; 115:114:11;  
119:12, 23; 120:1  
**awareness** 114:17, 17  
**away** 27:5; 47:7; 75:11;  
27:5; 47:7; 75:11

## B

**Bachus** 123:24, 24  
**back** 6:13; 15:2; 17:7;  
19:19; 28:11; 32:4, 12;  
38:24; 51:13; 58:4; 59:24;  
68:11; 77:5; 88:12; 94:16,  
17; 98:16; 104:8; 106:18;  
107:7; 111:24; 112:5;  
115:14, 17; 6:13; 15:2;  
17:7; 19:19; 28:11; 32:4,  
12; 38:24; 51:13; 58:4;  
59:24; 68:11; 77:5; 88:12;  
94:16, 17; 98:16; 104:8;  
106:18; 107:7; 111:24;  
112:5; 115:14, 17  
**background** 22:16; 32:8;  
22:16; 32:8  
**bad** 36:21, 21  
**BAHR** 114:6, 7; 115:7;  
114:6, 7; 115:7  
**ban** 29:1, 9, 95:12, 13;  
29:1, 9, 95:12, 13  
**bands** 38:21; 118:9;  
38:21; 118:9  
**banned** 29:6, 9, 18; 33:9,  
13; 96:1, 5; 29:6, 9, 18;  
33:9, 13; 96:1, 5  
**banning** 93:25; 94:3, 7,  
11; 95:2, 7; 93:25; 94:3, 7,  
11; 95:2, 7  
**Baron** 8:15, 15  
**based** 15:20; 20:21;  
21:15; 24:7; 27:17; 32:8;  
33:20; 71:6; 77:23; 89:5;

91:1; 92:12, 16, 17; 114:9, 19; 117:2; 119:3; 123:14, 16; 15:20; 20:21; 21:15; 24:7; 27:17; 32:8; 33:20; 71:6; 77:23; 89:5; 91:1; 92:12, 16, 17; 114:9, 19; 117:2; 119:3; 123:14, 16  
**Basically** 36:15; 104:10; 106:7; 36:15; 104:10; 106:7  
**basis** 8:16; 21:22; 8:16; 21:22  
**bears** 75:4, 4  
**become** 102:14, 14  
**behalf** 74:7, 7  
**believes** 77:24, 24  
**below** 32:3; 47:17; 79:13; 100:7, 12; 117:12; 32:3; 47:17; 79:13; 100:7, 12; 117:12  
**Bendix** 50:16, 16  
**best** 11:2; 29:20; 52:10; 77:23, 24; 79:16; 110:8, 20; 11:2; 29:20; 52:10; 77:23, 24; 79:16; 110:8, 20  
**Bestwall** 70:19, 19  
**better** 6:6; 28:11; 6:6; 28:11  
**beyond** 45:12; 49:17, 19; 21:99:23; 45:12; 49:17, 19; 21:99:23  
**bifocals** 62:7, 7  
**bigger** 22:19; 52:8; 22:19; 52:8  
**biggest** 97:11; 111:2; 97:11; 111:2  
**Billing** 14:18, 18  
**billings** 14:19, 19  
**bio-persistence** 54:16, 21, 16, 21  
**bio-persistent** 54:24, 24  
**biological** 106:11, 11  
**biopersistence** 55:9, 9  
**bit** 51:10, 10  
**blown** 47:8, 8  
**Boglusa** 11:9, 9  
**bold** 58:20, 20  
**bonding** 47:22; 48:4, 9; 47:22; 48:4, 9  
**book** 11:23; 58:5, 9; 59:24; 77:5; 11:23; 58:5, 9; 59:24; 77:5  
**books** 13:18; 14:8; 13:18; 14:8  
**bore** 46:17, 17  
**Borg-Warner** 10:19; 11:8, 11; 10:19; 11:8, 11  
**both** 9:25; 11:3, 6; 25:19; 43:11; 52:21; 61:8; 65:18; 92:1; 103:11; 9:25; 11:3, 6; 25:19; 43:11; 52:21; 61:8; 65:18; 92:1; 103:11  
**bought** 25:17, 17  
**Brachmann** 37:21; 115:21; 118:8; 37:21;

115:21; 118:8  
**brake** 10:11, 21, 24; 17:17, 19; 18:18; 19:7, 8, 11, 22; 20:4, 25; 21:12; 24:15, 22, 25; 27:17, 18, 21, 22; 28:16, 17, 19, 24; 29:7, 11, 19; 30:3; 34:5, 10; 36:1, 7; 37:11, 13, 18, 24; 38:21; 39:11, 20; 41:1, 4; 46:2, 10, 11, 23, 25; 47:1, 5, 7, 21, 25; 57:23; 60:16; 62:14; 116:2; 118:7, 9, 13, 16; 119:5; 10:11, 21, 24; 17:17, 19; 18:18; 19:7, 8, 11, 22; 20:4, 25; 21:12; 24:15, 22; 25:27:17, 18, 21, 22; 28:16, 17, 19, 24; 29:7, 11; 19:30:3; 34:5, 10; 36:1, 7; 37:11, 13, 18, 24; 38:21; 39:11, 20; 41:1, 4; 46:2, 10, 11, 23, 25; 47:1, 5, 7, 21, 25; 57:23; 60:16; 62:14; 116:2; 118:7, 9, 13, 16; 119:5  
**brakes** 10:11, 17, 19; 12:20; 24:18; 25:12, 16, 17; 30:7; 33:20; 36:18; 37:6; 119:14, 16; 10:11, 17, 19; 12:20; 24:18; 25:12, 16, 17; 30:7; 33:20; 36:18; 37:6; 119:14, 16; 10:11, 17, 19; 12:20; 24:18; 25:12, 16, 17; 30:7; 33:20; 36:18; 37:6; 119:14, 16  
**brand** 109:23, 23  
**breadth** 13:23, 23  
**break** 105:16; 110:6; 105:16; 110:6  
**breaking** 52:23, 23  
**Bridges** 8:21, 21  
**bring** 9:9; 11:22; 12:9; 14:9; 43:13; 9:9; 11:22; 12:9; 14:9; 43:13  
**bringing** 13:13; 14:10; 13:13; 14:10  
**Britain** 33:5, 8; 36:12; 33:5, 8; 36:12  
**British** 25:23, 23  
**brought** 6:14, 16; 10:4; 11:25; 20:5; 22:1; 68:5; 87:1, 6; 14, 16; 10:4; 11:25; 20:5; 22:1; 68:5; 87:1  
**Budd** 8:15, 15  
**Bulletin** 19:1; 29:23; 19:1; 29:23  
**Bureau** 98:8, 8  
**bystanders** 72:22, 22

**C**

**calendar** 9:17, 17  
**call** 6:13; 8:14; 13:12; 17:16; 30:2; 36:7; 45:1; 65:22; 66:1; 67:2, 4, 6; 68:11; 76:25; 77:6; 6:13; 8:14; 13:12; 17:16; 30:2; 36:7; 45:1; 65:22; 66:1; 67:2, 4, 6; 68:11; 76:25; 77:6

**called** 65:24; 68:19; 70:19; 100:3, 5; 65:24; 68:19; 70:19; 100:3, 5  
**came** 42:4; 44:2, 5; 42:4; 44:2, 5  
**Camus** 66:24; 67:2, 3, 4, 4, 7; 66:24; 67:2, 3, 4, 4, 7  
**can** 5:18; 7:14, 16, 18; 12:3, 11, 16; 13:7, 8, 9, 25; 14:2; 15:2, 3; 22:25; 23:23; 25:20; 26:1, 14; 27:2, 3; 28:8, 19; 32:4, 5; 34:2, 17, 18; 35:22; 38:14; 39:1; 45:11; 48:21; 49:3, 24, 25; 52:22; 54:2; 56:13, 24; 60:24; 63:3; 66:8; 83:8; 86:16, 18, 22; 91:25; 94:8, 10; 101:23, 23; 102:4; 105:16; 107:2; 114:17; 115:14, 15; 118:9; 12:3, 11, 16; 13:7, 8, 9, 25; 14:2; 15:2, 3; 22:25; 23:23; 25:20; 26:1, 14; 27:2, 3; 28:8, 19; 32:4, 5; 34:2, 17, 18; 35:22; 38:14; 39:1; 45:11; 48:21; 49:3, 24, 25; 52:22; 54:2; 56:13, 24; 60:24; 63:3; 66:8; 83:8; 86:16, 18, 22; 91:25; 94:8, 10; 101:23, 23; 102:4; 105:16; 107:2; 114:17; 115:14, 15; 118:9  
**Canada** 33:5; 51:15; 33:5; 51:15  
**Canadian** 23:3; 41:17; 42:18, 22; 23:3; 41:17; 42:18, 22  
**cancer** 23:6; 24:1, 3, 6, 7; 40:10; 43:11; 53:3; 61:7; 62:2, 18; 63:17; 64:15, 22; 65:15; 80:10, 16; 91:6, 20; 92:15; 102:18, 24; 103:7; 104:1, 4, 12, 23; 106:2, 8, 16, 22; 107:17; 110:25; 111:1, 2, 7, 11, 17, 21; 117:17; 23:6; 24:1, 3, 6, 7; 40:10; 43:11; 53:3; 61:7; 62:2, 18; 63:17; 64:15, 22; 65:15; 80:10, 16; 91:6, 20; 92:15; 102:18, 24; 103:7; 104:1, 4, 12, 23; 106:2, 8, 16, 22; 107:17; 110:25; 111:1, 2, 7, 11, 17, 21; 117:17  
**cancers** 63:21, 22; 91:18; 92:6, 25; 93:7; 98:1; 101:16; 102:23; 63:21, 22; 91:18; 92:6, 25; 93:7; 98:1; 101:16; 102:23  
**candidate** 54:20, 20  
**capacity** 117:15, 15  
**caption** 123:3, 3  
**car** 16:15; 33:19; 59:8, 12; 16:15; 33:19; 59:8, 12  
**carbon** 51:2, 2  
**carcinogen** 107:21, 22; 108:7; 107:21, 22; 108:7  
**carcinogenic** 66:21, 21

**carcinogens** 112:3, 7, 3, 7  
**cardiovascular** 50:25, 25  
**care** 80:15, 15  
**career** 24:24; 80:1; 24:24; 80:1  
**Carolina** 40:18; 51:21; 69:23, 25; 40:18; 51:21; 69:23, 25  
**Carpenters** 7:6; 72:13; 7:6; 72:13  
**carries** 39:5, 5  
**carry** 39:7, 7  
**cars** 16:11; 17:6; 24:18; 16:11; 17:6; 24:18  
**Cartier** 42:25, 25  
**case** 10:10, 13, 14, 20, 20, 21; 11:8, 9, 21, 23; 13:15, 15, 21; 14:15, 19, 21; 15:9, 12, 14, 16; 20:22; 34:7, 13, 21, 22; 39:18, 18, 19; 41:18; 42:20; 48:23; 56:17, 23; 57:1; 60:4, 5, 13; 63:10, 15; 70:17; 76:13; 87:22; 90:17; 96:22; 114:11; 123:9, 11; 10:10, 13, 14, 20, 20, 21; 11:8, 9, 21, 23; 13:15, 15, 21; 14:15, 19, 21; 15:9, 12, 14, 16; 20:22; 34:7, 13, 21, 22; 39:18, 18, 19; 41:18; 42:20; 48:23; 56:17, 23; 57:1; 60:4, 5, 13; 63:10, 15; 70:17; 76:13; 87:22; 90:17; 96:22; 114:11; 123:9, 11  
**cases** 9:7; 10:24; 60:5, 9; 100:12; 9:7; 10:24; 60:5, 9; 100:12  
**causal** 24:8, 8  
**causation** 24:5, 5  
**cause** 22:25; 23:23; 25:21; 26:1; 28:2, 4, 8; 42:12; 101:23; 111:2, 11, 16, 20; 22:25; 23:23; 25:21; 26:1; 28:2, 4, 8; 42:12; 101:23; 111:2, 11, 16, 20  
**causes** 102:2; 110:25; 111:7; 102:2; 110:25; 111:7  
**cc** 31:3, 23; 47:9; 31:3, 23; 47:9  
**CCR** 123:24, 24  
**ceiling** 86:19; 87:7; 89:16; 113:11; 86:19; 87:7; 89:16; 113:11  
**celebrated** 74:14, 14  
**central** 53:4, 8, 12, 4, 8, 12  
**century** 91:9, 9  
**ceramic** 55:16, 17, 24, 16, 17, 24  
**certain** 113:17, 17  
**certainly** 46:13; 51:4; 94:2; 97:11; 107:8, 24;

111:10; 46:13; 51:4; 94:2; 97:11; 107:8, 24; 111:10  
**CertainTeed** 81:24; 83:20; 86:2; 81:24; 83:86:2  
**certify** 123:2, 8, 2, 8  
**cetera** 108:11, 11  
**chairperson** 7:4, 4  
**change** 18:14; 67:25; 18:14; 67:25  
**changed** 7:3; 67:21; 67:21  
**charge** 15:18; 100:22; 15:18; 100:22  
**charged** 123:20, 20  
**charges** 15:17; 123:17; 15:17; 123:15, 17  
**Charleston** 40:18, 18  
**charts** 11:19, 19  
**chest** 9:3, 3  
**Chris** 23:7, 7  
**Chrysler** 16:6, 8, 10, 18; 24:16, 23; 25:12, 14; 19, 11; 48:23; 49:6, 16; 6:8, 10, 16, 18; 24:23; 25:12, 17; 41:9, 11; 48:23; 49:6, 13  
**chrysotile** 25:5, 13, 2, 21; 26:1, 3, 4, 6, 7, 10, 13, 19; 27:10; 28:2, 8; 42:12, 14, 17, 19, 21; 44:51:10; 52:1; 54:24; 55:56:8, 13; 25:5, 13, 20, 26:1, 3, 4, 6, 7, 10, 11, 19; 27:10; 28:2, 8; 42:14, 17, 19, 21; 43:9; 51:52:1; 54:24; 55:1, 5; 56:13  
**chrysotile-only** 51:15  
**CIB** 18:21; 19:6; 29:23; 18:21; 19:6; 29:23  
**cigarette** 101:19; 102:108:18; 101:19; 102:2; 108:18  
**Circuit** 29:2, 2  
**circumstances** 114:12  
**cite** 93:23, 23  
**cited** 60:19, 19  
**cites** 25:4, 4  
**citizen** 113:3, 3  
**city** 22:14, 18, 21; 23:122:14, 18, 21; 23:17  
**Civil** 5:17, 17  
**claim** 71:15; 110:1; 71:15; 110:1  
**clarification** 78:15, 15  
**classification** 68:18, 18  
**classified** 87:18, 18  
**classify** 28:25, 25  
**clean** 31:21, 21  
**clear** 10:18; 92:1; 116:18; 10:18; 92:1; 116:17  
**clearance** 55:3, 4, 3,

|                              |                             |                                |                              |                              |
|------------------------------|-----------------------------|--------------------------------|------------------------------|------------------------------|
| clearly 65:11, 11            | 89:24; 70:23; 72:6; 83:10;  | 10, 20                         | 50:4; 123:9, 10; 5:13;       | damaged 91:11, 11            |
| clients 8:16, 16             | 84:20; 86:23; 89:24         | contain 73:22, 22              | 49:17, 21; 50:4; 123:9, 10   | Dana 81:12; 84:13; 81:12;    |
| close 10:22; 65:19;          | compounds 71:15, 21,        | contained 48:1; 71:22;         | count 31:6; 44:25; 31:6;     | 84:13                        |
| 109:11; 10:22; 65:19;        | 25; 72:11, 14; 73:16, 19,   | 72:1, 6; 86:19, 23; 88:3;      | 44:25                        | Dankovic 56:11; 60:20;       |
| 109:11                       | 22; 74:2; 114:13, 18;       | 112:24; 119:17; 48:1;          | counting 43:25; 47:15,       | 56:11; 60:20                 |
| cloth 36:1, 1                | 71:15, 21, 25; 72:11, 14;   | 71:22; 72:1, 6; 86:19, 23;     | 17; 117:4; 43:25; 47:15,     | data 13:19; 42:19; 78:18;    |
| clutch 10:20, 20             | 73:16, 19, 22; 74:2;        | 88:3; 112:24; 119:17           | 17; 117:4                    | 106:13; 13:19; 42:19;        |
| co-worker 8:19, 20;          | 114:13, 18                  | containing 28:24; 76:6;        | countries 33:12, 16, 12,     | 78:18; 106:13                |
| 20:19; 8:19, 20; 20:19       | comprehensive 30:17;        | 117:5; 28:24; 76:6; 117:5      | 16                           | date 7:2; 15:14; 32:15;      |
| co-workers 20:14; 21:9;      | 41:21; 30:17; 41:21         | contains 97:1; 112:3, 6;       | country 22:14; 31:1;         | 33:22; 7:2; 15:14; 32:15;    |
| 90:21; 20:14; 21:9; 90:21    | comprises 65:11, 11         | 97:1; 112:3, 6                 | 22:14; 31:1                  | 33:22                        |
| co-wrote 112:19, 19          | computer 7:1, 1             | contaminant 26:4, 4            | COUNTY 123:1, 1              | dated 8:13, 13               |
| coal 26:20, 20               | computerized 13:19, 19      | contaminants 23:22, 22         | couple 7:7; 116:13, 17;      | dates 71:19; 10:14;          |
| coatings 87:14, 18, 14,      | concentration 32:10;        | contaminated 26:7, 7           | 7:7; 116:13, 17              | 71:19; 10:14                 |
| 18                           | 47:8; 92:10, 18; 95:14;     | contamination 53:8;            | course 56:19; 97:18;         | day 108:15; 123:22, 25;      |
| coffee 28:12, 12             | 100:12; 103:21; 117:6, 7,   | 54:5, 16; 53:8; 54:5, 16       | 56:19; 97:18                 | 108:15; 123:22, 25           |
| cohort 51:14, 16; 52:13,     | 10, 13; 32:10; 47:8; 92:10, | context 118:12, 12             | courts 29:4, 4               | days 11:13; 67:25; 11:13;    |
| 14; 57:14, 16; 65:19;        | 18; 95:14; 100:12; 103:21;  | continued 40:8, 8              | cover 8:11; 11:1; 8:11;      | 67:25                        |
| 105:22; 51:14, 16; 52:13,    | 117:6, 7, 10, 13            | contractors 32:1, 1            | 11:1                         | deal 39:11, 11               |
| 14; 57:14, 16; 65:19;        | concentrations 22:24;       | contrast 31:8; 43:24;          | covered 49:7; 50:3; 49:7;    | dealing 9:22, 22; 12:20;     |
| 105:22                       | 23:23; 28:3; 47:6; 114:21;  | 44:6, 22; 65:14; 92:13;        | 50:3                         | 15:23; 31:17; 41:23;         |
| collected 18:3; 77:3;        | 22:24; 23:23; 28:3; 47:6;   | 31:8; 43:24; 44:6, 22;         | covers 101:3, 3              | 9:18; 96:10; 97:13; 99:6;    |
| 18:3; 77:3                   | 114:21                      | 65:14; 92:13                   | cranes 119:25, 25, 25, 25    | 9:22, 22; 12:20; 15:23;      |
| collectively 8:6, 6          | concern 17:5, 12, 5, 12     | control 63:10, 15; 75:15;      | created 31:19; 76:4, 7;      | 31:17; 41:23; 9:18;          |
| combustion 90:13, 13         | concerned 80:10, 15, 22,    | 96:9, 10; 97:20; 99:11, 25;    | 31:19; 76:4, 7               | 96:10; 97:13; 99:6           |
| coming 33:7; 44:2; 55:19;    | 25, 10, 15, 22, 25          | 63:10, 15; 75:15; 96:9, 10;    | criteria 76:10, 16, 17, 20;  | deals 19:6; 36:6; 19:6;      |
| 33:7; 44:2; 55:19            | concerning 23:2; 75:20;     | 97:20; 99:11, 25               | 77:12, 14, 19, 21; 78:2;     | 36:6                         |
| commercial 26:25;            | 78:18; 87:2; 90:16; 92:22;  | controlled 78:20, 20           | 79:24; 80:8; 92:2, 3, 8;     | deal 10:17; 36:22; 78:9;     |
| 68:19; 69:4; 26:25; 68:19;   | 101:2; 114:24; 115:4;       | controlling 96:9, 9            | 95:22; 107:25; 108:13;       | 82:15; 10:17; 36:22; 78:9;   |
| 69:4                         | 119:13; 23:2; 75:20;        | controls 89:2, 2               | 112:19, 22; 113:24;          | 82:15                        |
| Commission 101:10;           | 78:18; 87:2; 90:16; 92:22;  | converted 46:3, 3              | 116:19, 24; 117:2; 76:10,    | deaths 111:1, 3, 7, 17, 21,  |
| 123:24; 101:10; 123:24       | 101:2; 114:24; 115:4;       | copied 115:13, 13              | 16, 17, 20; 77:12, 14, 19,   | 1, 3, 7, 17, 21              |
| Committee 7:5; 76:15,        | 119:13                      | copies 12:3; 13:4, 7;          | 21; 78:2; 79:24; 80:8; 92:2, | debate 28:5, 6; 10:12;       |
| 24; 77:1, 6, 15; 80:15; 7:5; | concluded 53:22; 54:2;      | 56:1; 116:8; 123:15; 12:3;     | 3, 8; 95:22; 107:25;         | 28:5, 6; 10:12               |
| 76:15, 24; 77:1, 6, 15;      | 56:12; 63:15; 120:5;        | 13:4, 7; 56:1; 116:8;          | 108:13; 112:19, 22;          | December 6:19, 19            |
| 80:15                        | 53:22; 54:2; 56:12; 63:15;  | 123:15                         | 113:24; 116:19, 24; 117:2    | decision 76:22; 77:8;        |
| Committees 16:14, 14         | 120:5                       | copy 12:1, 10; 14:1, 2;        | criticisms 109:15, 23,       | 76:22; 77:8                  |
| Commonwealth 35:6, 6         | conclusion 42:3; 54:1;      | 35:13, 14, 15; 36:20; 38:8;    | 15, 23                       | decision-making 76:18;       |
| communication 90:16,         | 58:17; 100:13; 42:3; 54:1;  | 61:10; 62:4; 68:7, 8, 11;      | crocidolite 42:8, 8          | 77:11, 18; 80:8; 76:18;      |
| 21, 16, 21                   | 58:17; 100:13               | 112:6; 115:15, 21, 23;         | CROSS-EXAMINATION            | 77:11, 18; 80:8              |
| community 23:1, 8, 11;       | conclusions 59:4, 7, 4, 7   | 116:6; 123:14; 12:1, 10;       | 5:6; 50:10; 67:17; 70:12;    | Defendant's 5:1; 7:21;       |
| 28:7; 41:22; 23:1, 8, 11;    | condition 91:11, 11         | 14:1, 2; 35:13, 14, 15;        | 74:4; 114:5; 5:6; 50:10;     | 8:9; 15:4; 5:1; 7:21; 8:9;   |
| 28:7; 41:22                  | conditions 66:5, 5          | 36:20; 38:8; 61:10; 62:4;      | 67:17; 70:12; 74:4; 114:5    | 15:4                         |
| companies 16:15; 74:8;       | conducted 50:18; 73:9;      | 68:7, 8, 11; 112:6; 115:15,    | cubic 44:4; 53:14; 79:13;    | define 31:21, 21             |
| 83:6, 13; 16:15; 74:8; 83:6, | 82:24; 83:4, 19, 22; 84:1,  | 21, 23; 116:6; 123:14          | 100:8; 44:4; 53:14; 79:13;   | defined 41:2, 2              |
| 13                           | 7, 11, 15; 90:11; 101:9;    | Corbett 52:19, 19              | 100:8                        | definition 41:3, 6; 55:16;   |
| company 27:14; 70:19;        | 115:2; 50:18; 73:9; 82:24;  | Cork 81:3; 83:2; 85:10,        | current 7:12; 18:25;         | 87:21; 94:12, 22; 41:3, 6;   |
| 81:4, 8, 24; 82:3, 22; 83:2; | 83:4, 19, 22; 84:1, 7, 11,  | 14; 86:10; 81:3; 83:2;         | 92:11; 7:12; 18:25; 92:11    | 55:16; 87:21; 94:12, 22      |
| 84:25; 85:4, 10, 10, 12, 13, | 15; 90:11; 101:9; 115:2     | 85:10, 14; 86:10               | customary 123:15, 17,        | Dement 92:9; 112:20;         |
| 14; 86:11, 13, 16, 22;       | conducting 57:2, 2          | Corning 9:23; 10:6;            | 19, 15, 17, 19               | 92:9; 112:20                 |
| 27:14; 70:19; 81:4, 8, 24;   | confusing 30:23; 65:9;      | 67:20, 22; 68:1; 9:23; 10:6;   | customers 112:16;            | deny 23:15, 15               |
| 82:3, 22; 83:2; 84:25; 85:4, | 30:23; 65:9                 | 67:20, 22; 68:1                | 113:5; 112:16; 113:5         | department 63:17; 98:9,      |
| 10, 10, 12, 13, 14; 86:11,   | Congress 40:6, 6            | corporate 81:1, 2, 7, 10,      | cut 28:11, 11                | 17; 63:17; 98:9, 17          |
| 13, 16, 22                   | Congressional 40:7, 7       | 11, 14, 15, 18, 19, 22, 23;    | cutoff 57:19, 19             | depend 109:4, 9, 4, 9        |
| compared 27:15; 54:11;       | Connecticut 64:5, 6, 7,     | 82:1, 2, 5, 6, 11, 12, 14, 16, | CV 6:17, 18; 32:17; 40:5,    | depending 22:17, 17          |
| 27:15; 54:11                 | 10, 5, 6, 7, 10             | 20, 21; 114:23; 81:1, 2, 7,    | 13; 6:17, 18; 32:17; 40:5,   | depends 46:10; 57:14,        |
| comparison 45:9, 9           | connection 11:20;           | 10, 11, 14, 15, 18, 19, 22,    | 13                           | 17; 103:16; 108:22; 46:10;   |
| complete 9:12; 30:14;        | 13:15, 20; 15:9; 24; 11:20; | 23; 82:1, 2, 5, 6, 11, 12, 14, |                              | 57:14, 17; 103:16; 108:22    |
| 123:6; 9:12; 30:14; 123:6    | 13:15, 20; 15:9, 24         | 16, 20, 21; 114:23             |                              | deposed 11:11, 11            |
| completely 118:3, 3          | consider 12:18, 18          | Corporation 16:6, 8, 11;       |                              | deposition 5:11, 16; 6:9;    |
| compliance 17:1, 1           | considered 11:20;           | 24:17; 49:6; 50:16; 81:12;     |                              | 9:11; 15:18; 21:9; 68:4, 14; |
| comply 45:16, 21, 16, 21     | 13:14; 41:5; 11:20; 13:14;  | 16:6, 8, 11; 24:17; 49:6;      |                              | 69:16; 71:10, 14; 96:15;     |
| composition 47:1, 1          | 41:5                        | 50:16; 81:12                   |                              | 120:5; 123:13, 21; 5:11,     |
| compound 70:23; 72:6;        | consistent 116:4, 4         | correctly 62:20; 63:1;         |                              | 16:6; 9:9; 11:15; 18; 21:9;  |
| 83:10; 84:20; 86:23;         | consists 35:24, 24          | 62:20; 63:1                    |                              | 68:4, 14; 69:16; 71:10, 14;  |
|                              | consulting 110:10, 20,      | counsel 5:13; 49:17, 21;       |                              | 96:15; 120:5; 123:13, 21     |

## D

daily 15:18, 18

Dale 7:24, 24

Dallas 22:13; 23:17;

22:13; 23:17

Dallas-Ft 51:6, 6

**depositions** 8:19, 19, 21;  
9:19; 10:23; 11:3; 20:14;  
18, 20; 21:8, 10; 81:2, 7,  
11, 15, 19, 23; 82:2, 6, 12,  
17, 21; 114:23; 8:19, 19,  
21; 9:19; 10:23; 11:3;  
20:14, 18, 20; 21:8, 10;  
81:2, 7, 11, 15, 19, 23;  
82:2, 6, 12, 17, 21; 114:23  
**design** 109:16; 110:2;  
109:16; 110:2  
**designation** 110:23, 23  
**determine** 42:11; 45:15;  
46:2, 8; 97:4; 117:8; 42:11;  
45:15; 46:2, 8; 97:4; 117:8  
**Detroit** 16:18, 18  
**developed** 45:23; 80:16;  
107:16; 45:23; 80:16;  
107:16  
**developing** 72:15; 73:2;  
117:12; 72:15; 73:2;  
117:12  
**Development** 32:20;  
55:10; 103:24; 112:18;  
32:20; 55:10; 103:24;  
112:18  
**device** 109:17, 17  
**devices** 110:3, 3  
**diagnosed** 21:17; 91:3;  
21:17; 91:3  
**diagnosis** 21:21; 22:1, 3;  
91:6; 21:21; 22:1, 3; 91:6  
**Diane** 123:24, 24  
**differences** 73:18, 18  
**different** 25:18; 27:11,  
12, 13; 44:20; 85:6; 93:5,  
6; 112:3; 25:18; 27:11, 12,  
13; 44:20; 85:6; 93:5, 6;  
112:3  
**differently** 111:14, 14  
**difficult** 6:2, 2  
**dig** 26:19, 19  
**direct** 44:16, 18; 45:2, 18;  
108:19; 116:15; 123:17;  
44:16, 18; 45:2, 18;  
108:19; 116:15; 123:17  
**directed** 60:10; 79:7;  
60:10; 79:7  
**direction** 123:5, 5  
**directly** 45:4; 70:18;  
72:24; 73:9, 11; 90:23;  
45:4; 70:18; 72:24; 73:9,  
11; 90:23  
**director** 32:19; 112:17;  
32:19; 112:17  
**disappearance** 100:9, 9  
**disclosure** 48:20, 25;  
49:1, 2; 123:12; 48:20, 25;  
49:1, 2; 123:12  
**discs** 46:25; 25  
**discuss** 118:7, 10, 7, 10  
**discussed** 39:10, 10  
**discusses** 118:9, 9  
**Discussion** 12:6; 95:8;  
12:6; 95:8  
**disease** 17:6, 9; 22:9, 25;

23:3; 26:2; 34:12; 39:21;  
41:12; 42:1, 14; 50:25;  
57:7; 59:13; 66:15, 18;  
73:3; 89:23; 90:5; 91:4;  
92:24; 96:10, 12; 97:20;  
99:11, 25; 100:9, 11;  
117:10, 12; 17:6, 9; 22:9,  
25; 23:3; 26:2; 34:12;  
39:21; 41:12; 42:1, 14;  
50:25; 57:7; 59:13; 66:15,  
18; 73:3; 89:23; 90:5; 91:4;  
92:24; 96:10, 12; 97:20;  
99:11, 25; 100:9, 11;  
117:10, 12  
**diseases** 22:5; 23:24;  
61:16, 25; 62:18; 63:13;  
66:5; 68:23; 69:6; 72:16;  
91:17; 92:6; 22:5; 23:24;  
61:16, 25; 62:18; 63:13;  
66:5; 68:23; 69:6; 72:16;  
91:17; 92:6  
**dispersion** 59:19, 19  
**distinction** 29:13; 33:1,  
6, 10; 29:13; 33:1, 6, 10  
**distinguish** 33:16;  
105:21; 33:16; 105:21  
**divide** 105:9, 24; 111:15;  
113:1; 105:9, 24; 111:15;  
113:1  
**divided** 104:8, 8  
**Division** 32:19, 21;  
112:17; 32:19, 21; 112:17  
**doctor** 21:25; 50:12;  
59:2; 61:18; 66:11; 93:10;  
114:7; 21:25; 50:12; 59:2;  
61:18; 66:11; 93:10; 114:7  
**document** 18:22; 76:11,  
16, 17, 20; 77:13, 14, 19;  
78:2; 80:9; 92:2, 8; 95:23;  
98:7, 10, 14; 112:19;  
116:19, 25; 117:2; 18:22;  
76:11, 16, 17, 20; 77:13,  
14, 19; 78:2; 80:9; 92:2, 8;  
95:23; 98:7, 10, 14;  
112:19; 116:19, 25; 117:2  
**documents** 6:14; 14:13;  
16:7; 50:15; 70:18; 77:22;  
79:24; 81:1, 6, 10, 14, 18,  
22; 82:1, 5, 11, 14, 16, 20;  
92:3; 107:25; 112:23;  
113:24; 114:23; 6:14;  
14:13; 16:7; 50:15; 70:18;  
77:22; 79:24; 81:1, 6, 10,  
14, 18, 22; 82:1, 5, 11, 14,  
16, 20; 92:3; 107:25;  
112:23; 113:24; 114:23  
**done** 16:5; 19:7; 21:8, 20;  
23:2, 11; 26:13; 30:6; 31:6;  
43:23; 44:15; 51:22; 63:4;  
81:5; 97:9, 12; 115:12, 19;  
116:14; 119:24; 16:5;  
19:7; 21:8, 20; 23:2, 11;  
26:13; 30:6; 31:6; 43:23;  
44:15; 51:22; 63:4; 81:5;  
97:9, 12; 115:12, 19;  
116:14; 119:24  
**dosage** 103:16, 16  
**dose** 22:9; 103:18; 22:9;  
103:18

**dose-related** 22:6, 6  
**down** 11:18; 32:10;  
115:13; 11:18; 32:10;  
115:13  
**Dr** 5:8, 20; 8:13; 13:24;  
20:18; 21:4; 41:14, 19, 24;  
42:5; 49:25; 56:2; 61:24;  
67:19; 70:14; 72:21; 73:5;  
74:6; 77:10, 15, 17; 80:14,  
19; 89:25; 94:1; 95:15;  
97:9, 13, 18, 22, 25; 98:3,  
20; 99:5, 10, 14, 17, 20,  
23; 100:6, 14; 102:12;  
104:7, 10, 20, 21; 105:8, 9,  
20, 24; 106:20; 116:17;  
5:8, 20; 8:13; 13:24; 20:18;  
21:4; 41:14, 19, 24; 42:5;  
49:25; 56:2; 61:24; 67:19;  
70:14; 72:21; 73:5; 74:6;  
77:10, 15, 17; 80:14, 19;  
89:25; 94:1; 95:15; 97:9,  
13, 18, 22, 25; 98:3, 20;  
99:5, 10, 14, 17, 20, 23;  
100:6, 14; 102:12; 104:7,  
10, 20, 21; 105:8, 9, 20,  
24; 106:20; 116:17  
**drafted** 112:13; 113:3;  
112:13; 113:3  
**drawn** 44:24, 24  
**Dreessen** 99:14, 17, 23;  
100:6; 99:14, 17, 23; 100:6  
**Dreessen's** 100:14, 14  
**drilled** 119:5, 5  
**drillers** 37:25; 38:21;  
118:9; 37:25; 38:21; 118:9  
**drilling** 118:17, 20, 17, 20  
**Drs** 59:11; 60:20; 59:11;  
60:20  
**drum** 46:19; 47:7; 46:19;  
47:7  
**drums** 19:7, 8; 30:3; 46:2,  
25; 19:7, 8; 30:3; 46:2, 25  
**due** 64:16, 16  
**duly** 5:4; 49:23; 5:4; 49:23  
**durability** 54:17, 21;  
55:9; 54:17, 21; 55:9  
**curable** 54:25, 25  
**duration** 63:18, 18  
**During** 16:12; 18:2;  
19:11; 71:15; 16:12; 18:2;  
19:11; 71:15  
**dust** 19:7; 27:21, 22;  
30:2, 10; 44:3, 10, 11;  
45:17; 46:2, 3, 19; 47:5;  
59:19; 65:17, 18; 79:18;  
96:9, 10, 25, 25; 97:3, 19;  
99:8, 11, 25; 100:7;  
108:21; 109:3, 10; 19:7;  
27:21, 22; 30:2, 10; 44:3,  
10, 11; 45:17; 46:2, 3, 19;  
47:5; 59:19; 65:17, 18;  
79:18; 96:9, 10, 25, 25;  
97:3, 19; 99:8, 11, 25;  
100:7; 108:21; 109:3, 10  
**dynamic** 48:5, 5  
**dynamics** 59:20, 20

## E

**earlier** 6:24; 15:14; 39:11,  
18, 20; 67:9; 87:20;  
115:24; 116:18; 6:24;  
15:14; 39:11, 18, 20; 67:9;  
87:20; 115:24; 116:18  
**earliest** 43:20, 20  
**early** 10:22; 40:3; 41:16;  
42:18; 43:5; 58:22; 84:22;  
10:22; 40:3; 41:16; 42:18;  
43:5; 58:22; 84:22  
**earth** 23:20, 20  
**easier** 30:23; 31:10;  
115:17; 116:7; 30:23;  
31:10; 115:17; 116:7  
**editor** 67:11, 11  
**editorial** 67:12, 12  
**effect** 18:6; 92:17; 18:6;  
92:17  
**effects** 106:11; 109:6;  
106:11; 109:6  
**Egleman** 80:19, 19  
**Egleman's** 80:14, 14  
**either** 9:11; 11:13; 17:19;  
28:2; 33:25; 34:19; 45:22;  
46:5; 51:6; 61:7; 67:8;  
76:13; 96:14; 119:4;  
123:18; 9:11; 11:13;  
17:19; 28:2; 33:25; 34:19;  
45:22; 46:5; 51:6; 61:7;  
67:8; 76:13; 96:14; 119:4;  
123:18  
**eliminate** 85:23; 92:14;  
85:23; 92:14  
**ELLISTON** 49:15; 74:5,  
7; 76:14; 78:25; 80:21;  
83:11, 18; 90:10; 91:25;  
92:19, 20; 93:4; 102:11;  
105:7; 110:5, 8; 114:2;  
117:19; 118:14; 119:20,  
22; 120:3; 49:15; 74:5, 7;  
76:14; 78:25; 80:21;  
83:11, 18; 90:10; 91:25;  
92:19, 20; 93:4; 102:11;  
105:7; 110:5, 8; 114:2;  
117:19; 118:14; 119:20,  
22; 120:3  
**else** 14:16; 24:12, 13;  
44:22; 116:12; 14:16;  
24:12, 13; 44:22; 116:12  
**employ** 123:10, 10  
**employed** 45:24; 65:12;  
72:13; 45:24; 65:12; 72:13  
**employee** 82:18; 86:9,  
16; 88:10, 15, 25; 82:18;  
86:9, 16; 88:10, 15, 25  
**employer** 79:7; 88:9, 17;  
89:6; 79:7; 88:9, 17; 89:6  
**employment** 62:24;  
63:12, 17, 18; 65:17;  
62:24; 63:12, 17, 18; 65:17  
**enacted** 29:15, 15  
**encounter** 108:14, 14  
**encountered** 87:24, 24  
**end** 34:5, 10; 36:8, 23;

37:4; 38:22; 57:24; 116:  
118:11, 12; 34:5, 10; 3  
23; 37:4; 38:22; 57:24;  
116:2; 118:11, 12  
**end-product** 97:16;  
98:11; 118:20; 97:16;  
98:11; 118:20  
**enforceable** 75:19, 1  
**enforced** 29:6, 14, 17,  
14, 17  
**engaged** 35:25; 41:2  
35:25; 41:22  
**engineering** 89:1, 1  
**engines** 90:13, 13  
**England** 23:5, 10; 97  
23:5, 10; 97:9  
**enormous** 28:3, 3  
**enough** 108:3, 3  
**entire** 7:23; 12:10; 14  
7:23; 12:10; 14:10  
**entirely** 117:17, 17  
**environment** 117:4,  
5  
**environments** 22:13  
23:21; 22:13; 23:21  
**EPA** 29:1; 30:11; 31:1  
32:7; 41:2, 6; 87:19; 29  
30:11; 31:19; 32:7; 41  
87:19  
**Epidemiologic** 34:8,  
58:2; 34:8, 14; 58:2  
**epidemiological** 34:  
41:21, 25; 42:11; 43:1  
53:23; 56:7, 18; 57:2,  
89:10, 14, 22; 97:8; 98  
101:2; 102:12; 104:7;  
34:10; 41:21, 25; 42:1  
43:1; 53:23; 56:7, 18;  
22; 89:10, 14, 22; 97:8  
98:21; 101:2; 102:12;  
104:7  
**epidemiologically** 3  
42:20; 34:5; 42:20  
**epidemiologist** 22:5  
57:5; 22:5; 57:5  
**epidemiologists** 57:  
12, 10, 12  
**epidemiology** 51:10  
52:9, 12; 55:13; 56:6,  
51:10, 11; 52:9, 12; 55  
56:6, 24  
**equal** 65:4, 4  
**equivalent** 36:15, 15  
**era** 107:9, 9  
**Eric** 50:12, 12  
**essentially** 95:11;  
100:13; 95:11; 100:13  
**estimate** 96:14; 110:  
20; 96:14; 110:9, 20  
**estimated** 111:6, 6  
**et** 108:10, 10  
**evaluation** 17:4; 41:  
17:4; 41:21  
**evaluations** 30:5, 14  
14  
**even** 25:17; 31:17; 4

53:11; 57:17, 17; 63:20;  
93:24; 106:8; 113:7;  
117:9; 119:17; 25:17;  
31:17; 44:2; 53:11; 57:17,  
17; 63:20; 93:24; 106:8;  
113:7; 117:9; 119:17  
**event** 106:20, 20  
**everyone** 8:12, 12  
**evidence** 12:17; 64:22;  
66:13, 16, 17, 19; 93:17;  
123:7; 12:17; 64:22;  
66:13, 16, 17, 19; 93:17;  
123:7  
**exact** 32:15; 33:22;  
53:17; 71:19; 87:21;  
107:9; 32:15; 33:22;  
53:17; 71:19; 87:21; 107:9  
**exactly** 31:24; 54:3;  
58:18; 68:15; 74:1;  
111:22; 31:24; 54:3;  
58:18; 68:15; 74:1; 111:22  
**examination** 88:10, 21;  
116:15; 88:10, 21; 116:15  
**examine** 83:12, 12  
**examined** 5:4, 4  
**example** 113:10, 11, 10,  
11  
**except** 5:13; 62:1, 18;  
5:13; 62:1, 18  
**exception** 29:8, 8  
**exceptions** 26:21, 21  
**excess** 53:3, 12, 24; 54:9;  
57:15; 102:24; 106:2;  
53:3, 12, 24; 54:9; 57:15;  
102:24; 106:2  
**excesses** 61:7, 7  
**exclude** 23:12, 12  
**excluded** 60:6, 6  
**excluding** 64:20, 20  
**excuse** 24:16, 17; 28:15;  
31:18; 49:15; 24:16, 17;  
28:15; 31:18; 49:15  
**exhaust** 108:14, 14  
**Exhibit** 5:1; 6:9; 7:15, 21;  
8:7, 9; 12:8, 13; 15:7;  
17:22; 20:12, 13, 16;  
21:16; 29:23; 46:6; 68:4;  
5:1; 6:9; 7:15, 21; 8:7, 9;  
12:8, 13; 15:7; 17:22;  
20:12, 13, 16; 21:16;  
29:23; 46:6; 68:4  
**exhibits** 11:19, 25; 15:4;  
11:19, 25; 15:4  
**existence** 74:10; 79:21;  
117:21; 74:10; 79:21;  
117:21  
**expect** 83:13; 100:9;  
83:13; 100:9  
**expectation** 65:11, 11  
**expected** 65:19, 19  
**expenses** 110:15, 19;  
123:18; 110:15, 19;  
123:18  
**experience** 65:18, 18  
**expert** 27:13; 41:6;  
59:19; 74:1; 110:1; 27:13;

41:6; 59:19; 74:1; 110:1  
**expertise** 45:13, 13  
**Expires** 123:24, 24  
**explain** 116:20, 22, 20,  
22  
**exposed** 55:23; 79:19;  
88:11, 15, 25; 106:9;  
114:20; 55:23; 79:19;  
88:11, 15, 25; 106:9;  
114:20  
**exposure** 17:13, 14;  
19:11; 21:2, 15; 22:10;  
30:7, 25; 41:13; 42:1;  
43:15; 51:2; 57:16; 59:13;  
64:23; 65:18; 73:7, 12;  
75:20; 78:3, 4; 79:12, 21;  
80:2; 89:1; 91:15; 92:4, 22;  
103:18, 20; 107:25;  
108:18; 109:3, 8, 9;  
114:13, 18; 117:18;  
118:18; 119:13; 17:13, 14;  
19:11; 21:2, 15; 22:10;  
30:7, 25; 41:13; 42:1;  
43:15; 51:2; 57:16; 59:13;  
64:23; 65:18; 73:7, 12;  
75:20; 78:3, 4; 79:12, 21;  
80:2; 89:1; 91:15; 92:4, 22;  
103:18, 20; 107:25;  
108:18; 109:3, 8, 9;  
114:13, 18; 117:18;  
118:18; 119:13  
**exposures** 23:9; 25:6, 7;  
41:23; 45:16; 53:13;  
72:14; 23:9; 25:6, 7; 41:23;  
45:16; 53:13; 72:14  
**express** 20:24, 24  
**extent** 46:14; 91:20;  
46:14; 91:20  
**extra** 12:1, 1

## F

**fabricating** 35:25, 25  
**facilities** 50:20, 22; 51:1;  
50:20, 22; 51:1  
**facility** 16:11; 25:1, 3;  
84:19, 22, 25; 85:4, 9, 18,  
20; 86:1, 5; 115:25; 16:11;  
25:1, 3; 84:19, 22, 25;  
85:4, 9, 18, 20; 86:1, 5;  
115:25  
**facing** 10:20, 20  
**fact** 9:21; 10:1; 30:8;  
42:15; 61:2; 65:10; 79:6;  
86:13; 88:24; 97:25;  
102:11; 9:21; 10:1; 30:8;  
42:15; 61:2; 65:10; 79:6;  
86:13; 88:24; 97:25;  
102:11  
**factories** 99:8, 8  
**factors** 23:11; 108:9;  
23:11; 108:9  
**factory** 23:18; 64:18;  
23:18; 64:18  
**Fair** 108:3, 3  
**fairly** 55:18, 22, 18, 22  
**fairness** 111:14, 14

**FALK** 31:14; 35:3, 6;  
50:11, 13; 58:8; 59:1; 60:3;  
61:20; 63:4, 9; 65:4; 66:11;  
67:15; 70:10; 119:8, 11,  
19; 31:14; 35:3, 6; 50:11,  
13; 58:8; 59:1; 60:3; 61:20;  
63:4, 9; 65:4; 66:11; 67:15;  
70:10; 119:8, 11, 19  
**familiar** 52:16; 55:3, 7;  
66:25; 70:5; 52:16; 55:3, 7;  
66:25; 70:5  
**families** 90:22, 22  
**family** 80:4, 4  
**far** 14:22; 50:1; 52:4, 8;  
14:22; 50:1; 52:4, 8  
**farther** 5:10, 10  
**feasibility** 76:20; 92:12,  
18; 116:21, 23; 76:20;  
92:12, 18; 116:21, 23  
**feasible** 89:2, 2  
**federal** 75:12, 12  
**fee** 15:19; 123:19; 15:19;  
123:19  
**feet** 47:7, 7  
**fell** 61:1, 1  
**few** 5:10; 7:1; 11:16; 26:9,  
21, 24; 54:5; 63:5; 70:16;  
85:23; 98:5; 107:15; 5:10;  
7:1; 11:16; 26:9, 21, 24;  
54:5; 63:5; 70:16; 85:23;  
98:5; 107:15  
**fiber** 31:3, 23; 48:10;  
55:16, 17; 59:22; 66:12;  
82:25; 83:5, 19, 23; 84:2,  
8, 12, 16; 87:3, 7, 10, 13;  
90:11; 115:4; 119:23;  
31:3, 23; 48:10; 55:16, 17;  
59:22; 66:12; 82:25; 83:5,  
19, 23; 84:2, 8, 12, 16;  
87:3, 7, 10, 13; 90:11;  
115:4; 119:23  
**fiberglass** 55:17, 17  
**fibers** 18:1; 19:4; 20:3;  
27:5, 6; 33:6; 43:25; 46:20,  
20; 47:5, 9, 14; 48:6;  
54:17; 55:2, 8, 11, 19, 24;  
56:3; 66:14, 21, 22; 117:4,  
9; 18:1; 19:4; 20:3; 27:5, 6;  
33:6; 43:25; 46:20, 20;  
47:5, 9, 14; 48:6; 54:17;  
55:2, 8, 11, 19, 24; 56:3;  
66:14, 21, 22; 117:4, 9  
**fibrogenic** 101:20, 21,  
24, 20, 21, 24  
**fibrosis** 102:6; 104:2;  
102:6; 104:2  
**fibrotic** 102:3, 3  
**field** 57:10, 12, 10, 12  
**figure** 105:2; 107:8;  
105:2; 107:8  
**figures** 17:25, 25  
**file** 7:24, 24  
**files** 12:19, 19  
**filter** 44:13, 23; 45:1;  
109:15; 44:13, 23; 45:1;  
109:15  
**final** 41:4, 4

**find** 14:2; 19:21; 26:6;  
38:15; 42:14; 43:3; 49:4;  
54:9, 11, 12; 115:21; 14:2;  
19:21; 26:6; 38:15; 42:14;  
43:3; 49:4; 54:9, 11, 12;  
115:21  
**finding** 106:4, 4  
**fine** 13:10; 34:4; 43:19;  
13:10; 34:4; 43:19  
**finite** 111:10, 10  
**Finkelstein** 61:8, 24, 8,  
24  
**Finnish** 52:3, 3  
**first** 5:4; 6:8, 16; 16:6;  
21:24; 34:24; 40:2, 4;  
41:13, 20, 25; 42:23; 43:7;  
44:5; 50:14; 52:11; 58:24;  
61:8; 62:11; 64:12; 68:9;  
16; 75:18, 23; 76:3; 89:21;  
90:2, 9; 97:7, 12; 98:20;  
101:1; 104:8; 116:1;  
118:1; 54:6; 6:8, 16; 16:6;  
21:24; 34:24; 40:2, 4;  
41:13, 20, 25; 42:23; 43:7;  
44:5; 50:14; 52:11; 58:24;  
61:8; 62:11; 64:12; 68:9;  
16; 75:18, 23; 76:3; 89:21;  
90:2, 9; 97:7, 12; 98:20;  
101:1; 104:8; 116:1; 118:1  
**fit** 54:19, 20; 109:15;  
54:19, 20; 109:15  
**five** 9:18; 46:21; 47:6, 9,  
16, 17, 19; 52:17; 53:14;  
66:14; 79:13; 100:7;  
107:12; 9:18; 46:21; 47:6,  
9, 16, 17, 19; 52:17; 53:14;  
66:14; 79:13; 100:7;  
107:12  
**Fleischer** 101:5, 5  
**Fleischer-Drinker**  
101:8, 12, 15, 8, 12, 15  
**Flexitallic** 81:16; 84:9;  
85:21, 22; 81:16; 84:9;  
85:21, 22  
**floor** 87:4, 4  
**flooring** 87:4, 17; 89:11,  
12; 87:4, 17; 89:11, 12  
**focus** 10:9; 40:19; 51:11;  
10:9; 40:19; 51:11  
**focused** 16:22; 54:15;  
16:22; 54:15  
**focusing** 21:10, 10  
**folks** 50:9, 9  
**follow-up** 67:10, 14;  
119:8; 67:10, 14; 119:8  
**follow-ups** 66:25;  
116:14; 66:25; 116:14  
**followed** 104:7, 7  
**following** 69:2; 118:24;  
69:2; 118:24  
**follows** 5:5, 5  
**foot** 44:5; 53:15; 79:13;  
100:8; 44:5; 53:15; 79:13;  
100:8  
**foregoing** 123:2, 5, 2, 5  
**form** 5:14; 41:5; 49:18,  
20; 70:24; 71:17; 76:8;

78:22; 80:17; 90:7; 93:1;  
102:8; 117:19; 118:14;  
5:14; 41:5; 49:18, 20;  
70:24; 71:17; 76:8; 78:22;  
80:17; 90:7; 93:1; 102:8;  
117:19; 118:14  
**format** 68:14, 17, 14, 17  
**forms** 33:13, 13  
**formulated** 32:21, 21  
**forsterite** 46:3, 9, 11, 3,  
9, 11  
**forth** 109:19, 19  
**found** 20:8; 27:18, 22;  
47:5, 6, 12; 53:3, 7, 11;  
54:2, 3; 59:7; 61:15, 24;  
63:13; 64:13, 16; 75:25;  
20:8; 27:18, 22; 47:5, 6,  
12; 53:3, 7, 11; 54:2, 3;  
59:7; 61:15, 24; 63:13;  
64:13, 16; 75:25  
**four** 7:12, 12  
**four-page** 68:17, 17  
**fourth** 69:21, 21  
**frame** 6:5; 56:24; 6:5;  
56:24  
**France** 106:5, 5  
**Freight** 69:24, 24  
**French** 67:5, 6, 5, 6  
25; 41:2; 73:22, 24, 25  
**friable** 41:2; 73:22, 24,  
25; 41:2; 73:22, 24, 25  
**friction** 19:23; 59:23;  
64:5; 87:2; 119:25; 19:23;  
59:23; 64:5; 87:2; 119:25  
**front** 58:21, 21  
**Fulton** 34:25; 35:3, 4, 5,  
11, 14; 36:6; 123:1; 34:25;  
35:3, 4, 5, 11, 14; 36:6;  
123:1  
**Fund** 7:6, 6  
**furnished** 114:10;  
123:16; 114:10; 123:16  
**further** 100:1; 113:20;  
123:8; 100:1; 113:20;  
123:8  
**future** 33:15, 15

## G

**GAF** 81:8; 83:6; 85:18;  
81:8; 83:6; 85:18  
**garage** 19:5, 5  
**Gary** 74:6; 83:8; 74:6;  
83:8  
**gaskets** 87:10, 16; 90:12,  
12; 87:10, 16; 90:12, 12  
**gathered** 87:3, 6, 9, 12, 3,  
6, 9, 12  
**gave** 18:13; 88:4; 113:23;  
18:13; 88:4; 113:23  
**general** 29:10; 74:20;  
100:17, 22; 102:19;  
104:12, 23; 106:3, 8, 17;  
111:6; 112:2; 29:10;  
74:20; 100:17, 22; 102:19;  
104:12, 23; 106:3, 8, 17;

111:6; 112:2  
**General's** 111:24; 112:5;  
111:24; 112:5  
**generally** 22:16; 66:3;  
106:19; 22:16; 66:3;  
106:19  
**generate** 57:2, 2  
**generic** 113:14, 23, 14,  
23  
**Geneva-sponsored**  
55:19, 19  
**geographic** 24:7, 7  
**George** 37:10, 10  
**Georgia** 70:15, 18; 72:5;  
123:1; 70:15, 18; 72:5;  
123:1  
**Germany** 41:16; 59:9, 13;  
41:16; 59:9, 13  
**gets** 55:1, 1, 1, 1  
**GI-tract** 102:18, 18  
**gigantic** 44:7, 7  
**Given** 6:5; 9:19; 10:24;  
14:24; 15:25; 17:16; 18:5,  
10; 20:1, 7, 17; 48:25;  
70:17, 21; 88:19; 89:3;  
91:2; 92:4; 114:14; 116:8;  
123:7; 6:5; 9:19; 10:24;  
14:24; 15:25; 17:16; 18:5,  
10; 20:1, 7, 17; 48:25;  
70:17, 21; 88:19; 89:3;  
91:2; 92:4; 114:14; 116:8;  
123:7  
**goes** 15:19; 47:3; 15:19;  
47:3  
**good** 35:14; 50:12; 62:4;  
65:23; 70:10; 91:10;  
35:14; 50:12; 62:4; 65:23;  
70:10; 91:10  
**Gosh** 22:22, 22  
**governing** 31:20, 20  
**government** 29:6, 18;  
30:1; 68:21; 69:1, 3; 75:18;  
76:3; 93:12; 98:18;  
100:16, 20; 29:6, 18; 30:1;  
68:21; 69:1, 3; 75:18; 76:3;  
93:12; 98:18; 100:16, 20  
**Government's** 98:15, 15  
**governmental** 98:7, 7  
**governments** 33:5, 5  
**grade** 27:15, 15, 15, 15  
**grades** 27:10, 12, 13, 10,  
12, 13  
**Great** 36:11, 11  
**greater** 46:21; 47:9, 15,  
19; 57:6; 64:24; 102:19;  
46:21; 47:9, 15, 19; 57:6;  
64:24; 102:19  
**greatest** 47:6; 111:11;  
47:6; 111:11  
**grind** 27:5, 5  
**grinders** 37:25; 38:20;  
118:9; 37:25; 38:20; 118:9  
**grinding** 36:17; 37:5;  
118:17, 20; 36:17; 37:5;  
118:17, 20  
**gross** 110:16, 19, 16, 19

**ground** 60:4, 13; 119:4;  
60:4, 13; 119:4  
**group** 52:17; 69:5; 72:22;  
77:11; 80:7, 8; 89:25;  
52:17; 69:5; 72:22; 77:11;  
80:7, 8; 89:25  
**groups** 16:1, 1  
**grows** 22:21, 21  
**guarantee** 92:14, 14  
**guess** 5:23; 23:4; 28:17;  
30:2, 21; 35:9; 55:20;  
68:25; 77:6; 96:20; 5:23;  
23:4; 28:17; 30:2, 21; 35:9;  
55:20; 68:25; 77:6; 96:20  
**guidance** 100:4, 4  
**guidelines** 30:12, 12  
**GUSTAFSON** 67:18, 19;  
69:20; 70:1, 8; 67:18, 19;  
69:20; 70:1, 8  
**Gypsum** 82:13, 15, 18,  
22; 84:17, 17, 25; 85:4;  
82:13, 15, 18, 22; 84:17,  
17, 25; 85:4

## H

**HAINES** 5:23; 6:5; 10:18;  
11:10; 13:22; 18:9; 21:4;  
28:11; 31:9; 36:25; 38:5;  
49:9, 23; 61:18; 63:3;  
64:25; 69:24; 70:11, 24;  
71:12, 17; 76:8; 78:22;  
80:17; 83:8, 16; 90:7;  
91:22; 93:1; 102:8; 105:4;  
115:9; 116:13, 16; 117:24;  
118:22; 5:23; 6:5; 10:18;  
11:10; 13:22; 18:9; 21:4;  
28:11; 31:9; 36:25; 38:5;  
49:9, 23; 61:18; 63:3;  
64:25; 69:24; 70:11, 24;  
71:12, 17; 76:8; 78:22;  
80:17; 83:8, 16; 90:7;  
91:22; 93:1; 102:8; 105:4;  
115:9; 116:13, 16; 117:24;  
118:22  
**Hampton** 69:23, 25, 23,  
25  
**hand** 112:25, 25  
**handy** 56:20, 20  
**Hang** 61:18, 18  
**happen** 55:25; 72:19;  
55:25; 72:19  
**happened** 116:22, 22  
**hard** 38:13, 13  
**HARTER** 50:7, 7  
**HARTON** 5:7, 8, 11, 25;  
6:7; 7:23; 8:11; 10:23;  
11:15; 12:4, 7; 14:12; 15:1,  
6; 18:14; 21:7; 28:13;  
31:16; 35:4, 8, 11; 37:8;  
38:8; 49:24; 58:6, 21; 60:1;  
115:11; 116:9; 118:24;  
119:2, 7; 5:7, 8, 11, 25;  
6:7; 7:23; 8:11; 10:23;  
11:15; 12:4, 7; 14:12; 15:1,  
6; 18:14; 21:7; 28:13;  
31:16; 35:4, 8, 11; 37:8;

38:8; 49:24; 58:6, 21; 60:1;  
115:11; 116:9; 118:24;  
119:2, 7  
**hate** 70:2, 2  
**hazard** 17:3; 30:5, 14;  
93:13; 17:3; 30:5, 14;  
93:13  
**hazards** 75:2, 14, 15;  
78:8, 9, 11, 19, 19; 75:2,  
14, 15; 78:8, 9, 11, 19, 19  
**head** 11:16; 31:25; 74:20;  
100:23; 11:16; 31:25;  
74:20; 100:23  
**Health** 7:6; 17:3; 25:23;  
30:5, 14; 36:16; 39:6;  
56:12; 72:11; 74:10, 13,  
21, 25; 75:1, 4, 5, 13; 77:3,  
25; 78:7, 17; 80:23; 92:17;  
93:11, 18; 95:19; 96:7;  
99:13; 100:21, 23; 112:10;  
76:17; 3; 25:23; 30:5, 14;  
36:16; 39:6; 56:12; 72:11;  
74:10, 13, 21, 25; 75:1, 4,  
5, 13; 77:3, 25; 78:7, 17;  
80:23; 92:17; 93:11, 18;  
95:19; 96:7; 99:13;  
100:21, 23; 112:10  
**heard** 79:15; 85:22; 98:3;  
100:19; 79:15; 85:22;  
98:3; 100:19  
**hearing** 123:7, 7  
**heat** 46:10, 10  
**heavily** 24:25, 25  
**held** 57:10, 12, 10, 12  
**help** 10:9; 28:14; 58:19;  
10:9; 28:14; 58:19  
**hereby** 123:2, 2  
**Herndon** 69:24, 24  
**Hesterberg's** 56:2, 2  
**high** 24:6; 44:9; 53:7;  
55:22; 24:6; 44:9; 53:7;  
55:22  
**high-volume** 44:7, 7  
**higher** 66:4; 73:12;  
103:20; 66:4; 73:12;  
103:20  
**himself** 95:15, 15  
**history** 8:15; 69:8; 71:8;  
8:15; 69:8; 71:8  
**HMSO** 36:13, 20, 13, 20  
**Hoffman** 98:3, 6, 3, 6  
**Hofman's** 98:4, 4  
**holes** 118:17, 17  
**hour** 15:20; 60:13; 15:20;  
60:13  
**hours** 14:25, 25  
**household** 90:3, 3  
**housekeeping** 68:3, 3  
**Hueper's** 94:1, 1  
**hundreds** 52:6, 6  
**Hygiene** 25:23; 40:14,  
17; 50:19; 51:5; 52:6;  
79:18; 115:3; 119:13;  
25:23; 40:14, 17; 50:19;  
51:5; 52:6; 79:18; 115:3;  
119:13

**hypotheses** 57:2, 2

## I

**IARC** 43:8, 12; 106:5;  
43:8, 12; 106:5  
**identification** 5:2; 7:22;  
8:10; 15:5; 5:2; 7:22; 8:10;  
15:5  
**identified** 68:20; 89:22;  
68:20; 89:22  
**identify** 26:11; 71:3;  
86:18, 22; 94:6, 10; 97:23;  
108:6; 26:11; 71:3; 86:18,  
22; 94:6, 10; 97:23; 108:6  
11 8:20, 20  
**impact** 55:10; 72:10;  
55:10; 72:10  
**impinger** 44:4, 4  
**importation** 33:14, 14  
**in-place** 91:10, 10  
**inappropriate** 49:20, 20  
**Inc** 85:15, 15  
**incident** 35:22, 22  
**Incidental** 123:17, 17  
**include** 30:4; 47:21;  
55:12, 15; 71:9; 73:15;  
94:13; 112:21; 30:4;  
47:21; 55:12, 15; 71:9;  
73:15; 94:13; 112:21  
**included** 12:21; 13:1;  
25:24, 25; 30:12; 39:14;  
89:19; 12:21; 13:1; 25:24,  
25; 30:12; 39:14; 89:19  
**includes** 20:13, 16, 13,  
16  
**including** 33:25; 75:6;  
76:10; 91:17; 92:6, 24;  
108:23; 33:25; 75:6;  
76:10; 91:17; 92:6, 24;  
108:23  
**income** 96:19; 110:9, 20;  
96:19; 110:9, 20  
**incorporated** 27:3, 3  
**increased** 34:11; 57:25;  
59:8; 61:17; 62:19; 64:16,  
22; 72:15; 73:2; 104:3, 12,  
23; 106:7, 16, 22, 25;  
107:12; 34:11; 57:25;  
59:8; 61:17; 62:19; 64:16,  
22; 72:15; 73:2; 104:3, 12,  
23; 106:7, 16, 22, 25;  
107:12  
**increasing** 62:23, 23;  
64:23; 62:23, 23; 64:23  
**independently** 21:21, 21  
**Indian** 75:6, 12, 6, 12  
**indicate** 9:11; 27:17, 21;  
79:19; 102:13; 9:11;  
27:17, 21; 79:19; 102:13  
**indicated** 88:1; 90:3;  
104:21; 106:15; 107:14;  
88:1; 90:3; 104:21;  
106:15; 107:14  
**indicates** 87:24, 24

**indicating** 34:11; 106:  
34:11; 106:21  
**indirect** 108:19, 19  
**individual** 79:7; 96:2;  
103:21; 104:4; 108:22;  
109:3; 113:2, 9; 79:7;  
96:24; 103:21; 104:4;  
108:22; 109:3; 113:2, 9  
**individual's** 108:10,  
**individuals** 80:22; 10:  
16; 80:22; 108:8, 16  
**industrial** 40:13, 17;  
50:19; 51:5; 52:6; 79:1;  
115:3; 119:13; 40:13, 17;  
50:19; 51:5; 52:6; 79:1;  
115:3; 119:13  
**Industries** 81:3; 83:1;  
85:9, 15; 86:10; 81:3; 8:  
85:9, 15; 86:10  
**industry** 35:23; 36:23;  
95:9, 17, 21; 96:2; 35:2;  
36:23; 95:9, 17, 21; 96:  
**information** 8:1, 17, 2;  
13:14; 18:3, 5, 15, 16;  
20:21, 23; 21:11; 24:20;  
25:11, 16; 33:21; 75:22;  
77:3; 79:18; 87:23; 88:  
91:1; 8:1, 17, 24; 13:14;  
18:3, 5, 15, 16; 20:21, 2;  
21:11; 24:20; 25:11, 16;  
33:21; 75:22; 77:3; 79:  
87:23; 88:19; 91:1  
**inhaled** 48:11, 11  
**initiated** 51:19; 52:1;  
51:19; 52:1  
**inspected** 84:24; 85:3;  
17; 86:1, 4; 84:24; 85:3;  
17; 86:1, 4  
**installing** 17:19; 18:18;  
17:19; 18:18  
**instance** 22:8; 23:16;  
26:19; 33:5; 44:19, 24;  
45:14; 49:6; 22:8; 23:16;  
26:19; 33:5; 44:19, 24;  
45:14; 49:6  
**Institute** 24:2; 32:22;  
52:3, 4; 24:2; 32:22; 52:  
4  
**instruction** 112:14;  
113:4; 112:14; 113:4  
**instructions** 113:8, 21  
23, 8, 21, 23  
**insulating** 36:1, 1  
**Insulation** 55:20; 73:1;  
19; 79:2; 101:3; 105:10;  
55:20; 73:10, 19; 79:2;  
101:3; 105:10  
**insulators** 105:22, 22  
**Intelligence** 18:25, 25  
**intense** 28:3, 3  
**interested** 61:6; 123:1;  
61:6; 123:11  
**interpose** 13:22, 22  
**interpret** 37:6, 6  
**interstitial** 102:5; 104:  
102:5; 104:2  
**into** 16:16, 21; 27:3, 4;

32:1; 47:3; 55:1; 60:12;  
35:7; 108:10; 110:19;  
117:21; 16:16, 21; 27:3, 4;  
32:1; 47:3; 55:1; 60:12;  
35:7; 108:10; 110:19;  
117:21  
**involved** 24:24; 40:13,  
16; 24:24; 40:13, 16  
**issue** 54:20; 91:20;  
95:25; 54:20; 91:20; 95:25  
**issued** 75:18; 76:4, 15;  
75:18; 76:4, 15  
**issues** 77:21; 115:4;  
77:21; 115:4  
**Ivan** 67:19, 19  
**Ivie** 8:21, 21

## J

**January** 9:24, 24  
**ob** 8:17; 70:10; 89:20;  
3:17; 70:10; 89:20  
**Johannesburg** 43:17,  
17  
**John** 92:9; 112:19; 92:9;  
112:19  
**JOHNSON** 69:15; 70:13,  
14; 71:5, 13, 20; 74:3;  
9:15; 70:13, 14; 71:5, 13,  
20; 74:3  
**Joint** 16:13; 52:2; 70:23;  
71:15, 21, 25; 72:6, 10, 14;  
73:16, 19, 22; 74:2; 84:20;  
36:23; 89:24; 114:13, 18;  
16:13; 52:2; 70:23; 71:15,  
21, 25; 72:6, 10, 14; 73:16,  
19, 22; 74:2; 84:20; 86:23;  
39:24; 114:13, 18  
**Jonathan** 70:14, 14  
**Joseph** 77:10, 15, 17, 10,  
15, 17  
**Journal** 23:5; 25:22, 23;  
38:18; 56:12; 23:5; 25:22,  
23; 38:18; 56:12  
**judgment** 60:10, 10  
**June** 87:25, 25

## K

**keep** 10:7; 12:16; 10:7;  
12:16  
**Kelly** 114:8, 25; 115:5;  
114:8, 25; 115:5  
**Kenneth** 7:24, 24  
**kept** 79:13; 100:7; 79:13;  
100:7  
**Kevin** 114:7, 7  
**kids** 32:4, 4  
**kin** 123:8, 8  
**kind** 14:14; 53:19; 56:20;  
94:15; 14:14; 53:19;  
56:20; 94:15  
**new** 50:6, 6  
**knowing** 49:10, 10

**knowledge** 11:2; 14:5;  
26:25; 29:20; 52:5, 10;  
60:7; 62:16; 68:22; 71:21;  
73:21; 79:16; 82:18;  
83:21, 25; 84:4, 10, 14, 18;  
85:19; 86:6; 87:5; 97:24;  
98:15; 103:24; 115:1;  
11:2; 14:5; 26:25; 29:20;  
52:5, 10; 60:7; 62:16;  
68:22; 71:21; 73:21;  
79:16; 82:18; 83:21, 25;  
84:4, 10, 14, 18; 85:19;  
86:6; 87:5; 97:24; 98:15;  
103:24; 115:1  
**known** 31:15; 78:24, 24;  
107:20; 108:13; 31:15;  
78:24, 24; 107:20; 108:13  
**knows** 8:12, 12

## L

**label** 112:14; 113:4, 23,  
25; 112:14; 113:4, 23, 25  
**labeling** 113:21, 21  
**labels** 112:25; 113:8;  
112:25; 113:8  
**Labor** 16:13; 98:9, 9, 18;  
16:13; 98:9, 9, 18  
**Lanza** 99:10, 20, 10, 20  
**Lanza's** 98:20; 99:5;  
98:20; 99:5  
**large** 12:8; 13:12; 30:9;  
42:16; 57:16, 16; 108:24;  
12:8; 13:12; 30:9; 42:16;  
57:16, 16; 108:24  
**large-scale** 97:8; 98:20;  
101:2; 97:8; 98:20; 101:2  
**larger** 22:20; 51:18;  
58:20; 22:20; 51:18; 58:20  
**largest** 51:15, 18; 52:14;  
51:15, 18; 52:14  
**laryngeal** 62:1, 18;  
63:21, 21; 102:23, 24;  
62:1, 18; 63:21, 21;  
102:23, 24  
**last** 7:11; 9:13, 14, 17, 19;  
10:5; 15:22; 59:1; 67:22,  
24; 82:7; 91:9; 119:20;  
7:11; 9:13, 14, 17, 19;  
10:5; 15:22; 59:1; 67:22,  
24; 82:7; 91:9; 119:20  
**late** 17:8; 85:15; 17:8;  
85:15  
**latencies** 42:16, 16  
**latency** 103:3, 7, 15, 19,  
22, 3, 7, 15, 19, 22  
**later** 25:4; 45:24; 48:18;  
25:4; 45:24; 48:18  
**latest** 10:1; 23:4; 10:1;  
23:4  
**law** 72:4; 79:16; 72:4;  
79:16  
**laws** 79:11, 11  
**lawyers** 16:1, 1, 1, 1  
**layman's** 56:20, 20  
**lead** 66:15, 15

**learning** 13:25, 25  
**least** 10:9; 16:17; 29:5;  
75:15; 98:15, 17; 102:22;  
10:9; 16:17; 29:5; 75:15;  
98:15, 17; 102:22  
**left** 31:9; 91:11, 12; 31:9;  
91:11, 12  
**legislation** 29:15, 15  
**LEMEN** 5:3, 8, 20; 13:24;  
21:4; 49:25; 67:19; 70:14;  
74:6; 105:8; 116:17; 5:3, 8,  
20; 13:24; 21:4; 49:25;  
67:19; 70:14; 74:6; 105:8;  
116:17  
**length** 46:21; 47:14, 16,  
17; 62:24; 66:12, 14;  
46:21; 47:14, 16, 17;  
62:24; 66:12, 14  
**Leonard** 37:10, 10  
**Leslie** 56:11, 11  
**less** 30:23; 64:17, 21;  
65:3, 4, 12, 21; 66:14;  
30:23; 64:17, 21; 65:3, 4,  
12, 21; 66:14  
**letter** 8:11, 11  
**letters** 14:13; 66:25;  
67:10, 14; 14:13; 66:25;  
67:10, 14  
**level** 22:16; 32:9; 53:8;  
56:16; 78:3; 92:16; 93:7;  
95:10; 107:20, 20; 108:6,  
14, 18; 109:9, 9; 117:16;  
22:16; 32:9; 53:8; 56:16;  
78:3; 92:16; 93:7; 95:10;  
107:20, 20; 108:6, 14, 18;  
109:9, 9; 117:16  
**levels** 21:15; 73:13;  
75:20; 79:12, 20; 80:3;  
89:1; 91:15, 16; 92:4, 5,  
22; 93:5; 96:9, 10; 97:19;  
100:7; 108:1; 116:22;  
119:14; 21:15; 73:13;  
75:20; 79:12, 20; 80:3;  
89:1; 91:15, 16; 92:4, 5,  
22; 93:5; 96:9, 10; 97:19;  
100:7; 108:1; 116:22;  
119:14  
**Lewis** 8:22, 22  
**library** 14:10, 10  
**lifestyles** 66:4, 4  
**light** 108:23, 23  
**likewise** 93:22, 22  
**limit** 30:25; 100:1, 3, 4;  
30:25; 100:1, 3, 4  
**limited** 60:6, 6  
**limits** 108:1, 1  
**line** 11:25; 12:1, 14; 13:2;  
25:24; 33:25; 34:2; 39:5, 8,  
12, 14, 16; 42:24; 43:7;  
46:6, 18; 73:9; 11:25; 12:1,  
14; 13:2; 25:24; 33:25;  
34:2; 39:5, 8, 12, 14, 16;  
42:24; 43:7; 46:6, 18; 73:9  
**liners** 17:20, 20  
**lines** 34:16, 16  
**lingo** 53:19, 19  
**lining** 10:24; 19:11;

27:17, 18, 23; 36:1; 37:18;  
39:20; 47:21, 25; 118:16;  
10:24; 19:11; 27:17, 18,  
23; 36:1; 37:18; 39:20;  
47:21, 25; 118:16  
**linings** 10:12; 17:17;  
18:18; 20:4, 25; 21:12;  
24:22; 27:21; 28:16, 17,  
19, 24; 29:7, 11, 19; 34:6,  
11; 36:7; 39:11; 119:5;  
10:12; 17:17; 18:18; 20:4,  
25; 21:12; 24:22; 27:21;  
28:16, 17, 19, 24; 29:7, 11,  
19; 34:6, 11; 36:7; 39:11;  
119:5  
**linked** 41:13; 42:1; 41:13;  
42:1  
**list** 9:7, 12; 11:18; 30:14;  
9:7, 12; 11:18; 30:14  
**listed** 27:14; 40:4, 12;  
73:8; 27:14; 40:4, 12; 73:8  
**lists** 27:24, 24  
**literature** 15:13; 18:19;  
19:19, 20; 20:2; 69:2; 87:1,  
3, 7, 10, 13; 15:13; 18:19;  
19:19, 20; 20:2; 69:2; 87:1,  
3, 7, 10, 13  
**litigation** 15:10; 96:19;  
110:11, 21; 15:10; 96:19;  
110:11, 21  
**little** 35:21; 78:14;  
110:22; 111:13; 35:21;  
78:14; 110:22; 111:13  
**live** 23:16, 16  
**locate** 38:10, 10  
**location** 24:7, 7  
**long** 74:16; 109:11;  
74:16; 109:11  
**longer** 66:20, 20  
**look** 7:18; 9:18; 17:21;  
30:19, 20, 22; 34:2; 35:12;  
36:21; 38:24; 39:1; 46:15;  
47:12; 48:14, 16; 50:7;  
51:9; 56:5; 57:5, 13; 58:4;  
60:18; 61:22; 69:14; 97:3;  
107:8; 112:5; 7:18; 9:18;  
17:21; 30:19, 20, 22; 34:2;  
35:12; 36:21; 38:24; 39:1;  
46:15; 47:12; 48:14, 16;  
50:7; 51:9; 56:5; 57:5, 13;  
58:4; 60:18; 61:22; 69:14;  
97:3; 107:8; 112:5  
**looked** 23:8, 10; 26:10;  
34:15; 41:10; 42:17; 46:1;  
52:12; 54:15; 59:2; 89:10,  
15; 23:8, 10; 26:10; 34:15;  
41:10; 42:17; 46:1; 52:12;  
54:15; 59:2; 89:10, 15  
**looking** 18:21; 23:6; 30:7,  
9; 42:21; 43:19; 44:3, 10;  
46:18; 50:21, 24; 60:25;  
61:21; 63:6; 72:22; 73:7, 9,  
10; 96:25; 18:21; 23:6;  
30:7, 9; 42:21; 43:19; 44:3,  
10; 46:18; 50:21, 24;  
60:25; 61:21; 63:6; 72:22;  
73:7, 9, 10; 96:25  
**Lord-only-knows-what**

47:22, 22  
**Lorimer** 17:22; 47:3;  
17:22; 47:3  
**Lorimer-Rohl** 19:16, 16  
**lose** 22:22, 22  
**lot** 9:22; 14:5; 22:18;  
30:23, 23; 38:12; 43:23;  
108:22; 109:4; 115:16;  
9:22; 14:5; 22:18; 30:23,  
23; 38:12; 43:23; 108:22;  
109:4; 115:16  
**lots** 13:24, 24  
**Louisiana** 10:3, 3  
**Love** 51:6, 6  
**low** 24:6, 6  
**lower** 56:8, 14; 57:17;  
118:4; 56:8, 14; 57:17;  
118:4  
**lowest** 117:7, 7  
**Luckily** 11:15; 39:9;  
11:15; 39:9  
**lung** 24:6, 7; 53:3; 54:23;  
55:1; 61:7; 63:17; 64:15,  
22; 65:15; 101:16; 103:7;  
104:1, 4, 12, 23; 106:2, 7,  
16, 22; 107:16; 111:11, 17;  
24:6, 7; 53:3; 54:23; 55:1;  
61:7; 63:17; 64:15, 22;  
65:15; 101:16; 103:7;  
104:1, 4, 12, 23; 106:2, 7,  
16, 22; 107:16; 111:11, 17  
**lungs** 48:12; 102:3;  
48:12; 102:3

## M

**M** 123:24, 24  
**Mainly** 16:24; 35:24;  
16:24; 35:24  
**maintenance** 19:12;  
50:20, 22; 51:1; 19:12;  
50:20, 22; 51:1  
**Majesty's** 36:14, 14  
**major** 16:15; 24:25;  
16:15; 24:25  
**makers** 17:5, 7, 5, 7  
**makes** 70:8; 77:22; 70:8;  
77:22  
**making** 16:11; 22:2;  
32:24, 25; 35:25; 47:20;  
76:22; 91:14; 16:11; 22:2;  
32:24, 25; 35:25; 47:20;  
76:22; 91:14  
**malignancies** 101:16, 16  
**man-made** 55:8, 11;  
56:3; 55:8, 11; 56:3  
**Management** 16:14, 14  
**Manhattan** 25:2, 8;  
39:24; 40:14; 25:2, 8;  
39:24; 40:14  
**Manheim** 40:15, 15  
**manufacture** 38:24;  
109:16; 110:2; 38:24;  
109:16; 110:2  
**manufactured** 24:22;

28:20; 72:1, 6; 83:1, 6, 20,  
24; 84:3, 8, 13, 17, 20;  
115:5; 24:22; 28:20; 72:1,  
6; 83:1, 6, 20, 24; 84:3, 8,  
13, 17, 20; 115:5  
**manufacturer** 24:16;  
86:18; 24:16; 86:18  
**Manufacturers** 55:21, 21  
**manufacturing** 25:1, 3,  
10; 27:8; 36:7, 22; 37:11,  
13, 19; 38:22; 47:20;  
57:24; 86:19, 23; 115:25;  
116:2; 118:7; 25:1, 3, 10;  
27:8; 36:7, 22; 37:11, 13,  
19; 38:22; 47:20; 57:24;  
86:19, 23; 115:25; 116:2;  
118:7  
**many** 14:8; 30:15; 43:2;  
57:10, 11; 66:5, 5; 108:9;  
14:8; 30:15; 43:2; 57:10,  
11; 66:5, 5; 108:9  
**map** 24:9, 9  
**maps** 24:3, 3  
**March** 74:18; 123:22;  
74:18; 123:22  
**Marine** 75:9, 9  
**Marines** 75:7, 7  
**Maritime** 101:10, 10  
**mark** 7:14, 17; 8:7; 12:7;  
13:4, 9; 15:3; 35:21; 7:14,  
17; 8:7; 12:7; 13:4, 9; 15:3;  
35:21  
**marked** 5:1; 7:21; 8:9;  
15:1, 4, 6; 68:6; 5:1; 7:21;  
8:9; 15:1, 4, 6; 68:6  
**marketing** 109:15; 110:2;  
109:15; 110:2  
**mask** 109:17, 24, 17, 24  
**mastics** 48:4, 9, 4, 9  
**material** 14:6, 14; 15:11;  
18:4; 25:10; 27:7; 69:10;  
70:21; 71:7; 87:4; 88:4, 6;  
89:17; 96:21; 114:14;  
118:21; 14:6, 14; 15:11;  
18:4; 25:10; 27:7; 69:10;  
70:21; 71:7; 87:4; 88:4, 6;  
89:17; 96:21; 114:14;  
118:21  
**materials** 14:23; 87:17;  
114:9, 22; 14:23; 87:17;  
114:9, 22  
**matter** 30:8; 44:21, 25;  
30:8; 44:21, 25  
**maximum** 14:25, 25  
**may** 6:3; 7:6; 15:24;  
17:18, 22; 20:24; 24:18;  
30:18, 20; 38:11; 39:13;  
41:9; 65:24; 66:17; 71:22;  
73:18; 86:3; 89:18;  
117:10; 120:1; 123:18;  
6:3; 7:6; 15:24; 17:18, 22;  
20:24; 24:18; 30:18, 20;  
38:11; 39:13; 41:9; 65:24;  
66:17; 71:22; 73:18; 86:3;  
89:18; 117:10; 120:1;  
123:18  
**maybe** 39:20; 48:21;

52:22; 68:8; 69:21; 39:20;  
48:21; 52:22; 68:8; 69:21  
**McDonald** 42:17, 21;  
43:1, 4, 14; 51:14; 52:8,  
13, 17; 54:1; 64:2; 42:17,  
21; 43:1, 4, 14; 51:14;  
52:8, 13, 17; 54:1; 64:2  
**McDonald's** 54:14;  
64:12; 54:14; 64:12  
**mean** 7:3; 13:7, 9; 20:8;  
26:16; 30:16; 34:21; 43:1,  
13; 44:17; 46:23; 50:3;  
73:24; 84:5; 90:23; 91:23;  
113:10; 116:10; 7:3; 13:7,  
9; 20:8; 26:16; 30:16;  
34:21; 43:1, 13; 44:17;  
46:23; 50:3; 73:24; 84:5;  
90:23; 91:23; 113:10;  
116:10  
**meaning** 90:12, 12  
**meant** 31:12, 13, 12, 13  
**measure** 32:10, 10  
**measuring** 92:18, 18  
**mechanic** 118:13, 13  
**mechanics** 19:5; 57:23;  
59:8, 12; 68:19; 69:4;  
89:12; 19:5; 57:23; 59:8,  
12; 68:19; 69:4; 89:12  
**medical** 7:24, 25; 8:5;  
9:1; 20:17; 21:25; 40:17;  
52:9; 78:18; 108:5; 7:24,  
25; 8:5; 9:1; 20:17; 21:25;  
40:17; 52:9; 78:18; 108:5  
**medically** 88:16, 20, 16,  
20  
**Medicine** 23:5, 5  
**MedLine** 12:23; 58:8, 11;  
12:23; 58:8, 11  
**meeting** 106:6, 14, 6, 14  
**member** 41:9; 74:16;  
76:24; 77:1; 95:19; 41:9;  
74:16; 76:24; 77:1; 95:19  
**members** 77:10, 17;  
80:14; 77:10, 17; 80:14  
**membrane** 44:13, 13  
**men** 61:15, 25; 62:18;  
64:20; 65:11; 61:15, 25;  
62:18; 64:20; 65:11  
**mention** 42:14; 76:1;  
98:3; 110:24; 42:14; 76:1;  
98:3; 110:24  
**mentioned** 34:24; 46:7;  
66:24; 67:9; 72:19; 34:24;  
46:7; 66:24; 67:9; 72:19  
**Merchant** 75:7, 9, 7, 9  
**Merewether** 97:9, 13, 18,  
22, 25, 9, 13, 18, 22, 25  
**mesothelioma** 21:18;  
22:8; 23:7; 25:21; 28:2, 9;  
41:12, 15; 42:2, 12; 43:15;  
53:4, 24; 54:4, 13; 55:10,  
22; 56:8, 13; 57:25; 59:8;  
61:7; 103:3; 21:18; 22:8;  
23:7; 25:21; 28:2, 9; 41:12,  
15; 42:2, 12; 43:15; 53:4,  
24; 54:4, 13; 55:10, 22;  
56:8, 13; 57:25; 59:8; 61:7;

103:3  
**mesotheliomas** 64:13;  
97:23; 99:18, 21; 101:13;  
64:13; 97:23; 99:18, 21;  
101:13  
**method** 44:4; 45:2, 18;  
117:4; 44:4; 45:2, 18;  
117:4  
**methodology** 45:5, 19,  
22, 23, 5, 19, 22, 23  
**methods** 45:8, 8  
**Metropolitan** 98:23, 23  
**micarda** 69:12, 22, 23;  
70:6; 69:12, 22, 23; 70:6  
**microfiche** 38:13, 13  
**micron** 47:9, 16, 17, 19,  
9, 16, 17, 19  
**microns** 46:21; 66:14;  
46:21; 66:14  
**microscope** 32:9; 97:4;  
32:9; 97:4  
**microscopy** 31:8; 43:25;  
44:6, 23; 92:13; 31:8;  
43:25; 44:6, 23; 92:13  
**mid** 32:12, 14, 17; 59:14;  
89:24; 112:11; 32:12, 14,  
17; 59:14; 89:24; 112:11  
**middle** 44:8, 8  
**Might** 7:17; 10:9; 79:4;  
85:23; 88:3; 90:4; 7:17;  
10:9; 79:4; 85:23; 88:3;  
90:4  
**military** 93:20, 20  
**mill** 10:2, 13, 14; 11:14;  
27:4; 10:2, 13, 14; 11:14;  
27:4  
**milling** 41:22, 22  
**million** 53:14; 79:13;  
100:8; 53:14; 79:13; 100:8  
**mills** 23:4; 42:18, 22;  
43:9, 11; 23:4; 42:18, 22;  
43:9, 11  
**mind** 63:6; 80:20; 86:8,  
15; 63:6; 80:20; 86:8, 15  
**mine** 23:19; 26:14; 23:19;  
26:14  
**Mine's** 7:10, 10  
**mineral** 55:8, 11; 56:3;  
55:8, 11; 56:3  
**mines** 23:4; 26:22, 23,  
24; 41:17; 42:6, 18, 22;  
43:9; 52:1; 53:5, 9, 12;  
23:4; 26:22, 23, 24; 41:17;  
42:6, 18, 22; 43:9; 52:1;  
53:5, 9, 12  
**minimal** 65:17, 17  
**minimum** 15:18, 18  
**mining** 26:20; 41:22;  
26:20; 41:22  
**minute** 12:5; 28:18;  
34:18, 20; 35:1; 46:17;  
61:19, 22; 12:5; 28:18;  
34:18, 20; 35:1; 46:17;  
61:19, 22  
**miscellaneous** 36:2, 2  
**missing** 68:9, 9

**misstated** 65:6, 6  
**mixed** 25:5, 7, 5, 7  
**model** 17:5, 7, 10, 5, 7, 10  
**models** 17:4, 6, 4, 6  
**moment** 51:12; 94:19;  
51:12; 94:19  
**monitored** 88:16, 20;  
91:13; 88:16, 20; 91:13  
**monoxide** 51:3, 3  
**months** 15:15, 15  
**Moore** 114:8, 25; 115:5;  
114:8, 25; 115:5  
**morbidity** 89:11, 15, 11,  
15  
**more** 14:5; 30:20; 63:5;  
66:21; 102:6, 14, 14;  
103:17, 18; 111:16, 20;  
14:5; 30:20; 63:5; 66:21;  
102:6, 14, 14; 103:17, 18;  
111:16, 20  
**morning** 50:12, 12  
**mortality** 40:3, 8; 60:16;  
64:16; 65:18; 89:11, 15;  
40:3, 8; 60:16; 64:16;  
65:18; 89:11, 15  
**most** 7:12; 9:20; 11:23;  
26:7, 21, 22; 40:21; 42:19;  
65:9; 7:12; 9:20; 11:23;  
26:7, 21, 22; 40:21; 42:19;  
65:9  
**mostly** 64:16, 16  
**motivation** 86:8, 15, 8,  
15  
**Motor** 69:24, 24  
**Mount** 95:5, 5, 5, 5  
**Move** 24:12; 53:1; 24:12;  
53:1  
**much** 11:1; 14:21; 46:2;  
68:12; 109:10; 11:1;  
14:21; 46:2; 68:12; 109:10  
**multiple** 112:7, 7  
**must** 28:3, 3  
**myself** 18:13; 59:21;  
18:13; 59:21

## N

**name** 50:12; 70:14; 74:6;  
77:13; 85:6; 107:2; 114:7;  
50:12; 70:14; 74:6; 77:13;  
85:6; 107:2; 114:7  
**name's** 77:12, 12  
**narrow** 10:9, 9  
**National** 24:1; 82:13, 15,  
18; 84:17, 25; 24:1; 82:13,  
15, 18; 84:17, 25  
**nature** 71:4; 108:25;  
109:12; 114:11, 21; 71:4;  
108:25; 109:12; 114:11,  
21  
**Naval** 93:19, 19  
**Navy** 101:9, 9  
**necessarily** 7:3, 3  
**necessary** 104:3, 3  
**necessitate** 14:10, 10

**need** 43:20; 61:19; 62;  
78:14; 83:12; 43:20;  
61:19; 62:6; 78:14; 83;  
**neighborhood** 9:25;  
33:23; 53:16, 20; 103:  
111:23; 112:4; 9:25;  
33:23; 53:16, 20; 103:  
111:23; 112:4  
**new** 7:2; 23:5; 33:11,  
40:9; 49:19; 55:18; 67;  
94:14; 95:6; 106:14; 7;  
23:5; 33:11, 13; 40:9;  
49:19; 55:18; 67:24;  
94:14; 95:6; 106:14  
**Newell** 81:20; 84:5;  
81:20; 84:5  
**newer** 6:21, 21  
**Newhouse** 23:10, 10  
**next** 5:22; 12:8, 13; 23;  
18; 36:10; 37:8, 16, 20;  
39:3; 48:23; 64:1; 70:1  
5:22; 12:8, 13; 23:18;  
36:10; 37:8, 16, 20; 39;  
48:23; 64:1; 70:11  
**NIOSH** 12:24; 16:12;  
18:20, 22; 30:6, 8; 32:6  
12, 18; 43:24, 24; 44:1  
15; 45:4, 15; 46:4; 51:2  
20, 25; 52:3; 57:21; 76  
16; 77:19, 21, 24; 78:7  
79:25; 91:14; 92:5, 9, 1  
93:5; 95:25; 96:13;  
109:20, 21; 113:7, 7, 1  
16, 20, 25; 117:3, 15, 1  
118:1; 12:24; 16:12;  
18:20, 22; 30:6, 8; 32:6  
12, 18; 43:24, 24; 44:1  
15; 45:4, 15; 46:4; 51:2  
20, 25; 52:3; 57:21; 76  
16; 77:19, 21, 24; 78:7  
79:25; 91:14; 92:5, 9, 1  
93:5; 95:25; 96:13;  
109:20, 21; 113:7, 7, 1  
16, 20, 25; 117:3, 15, 1  
118:1  
**non-asbestos** 27:6, 6  
**non-malignant** 91:3,  
**non-smokers** 102:20  
**none** 20:5; 59:10; 63:2  
20:5; 59:10; 63:21  
**nonfriable** 41:2, 5; 87;  
41:2, 5; 87:18  
**nonresponsive** 92:1  
95:24; 92:19; 95:24  
**nonsmoker** 102:7, 7  
**nonsmokers** 102:15;  
104:9; 105:10, 21, 25;  
106:1, 6; 102:15; 104:9  
105:10, 21, 25; 106:1,  
**nonsmoking** 104:11,  
106:15, 23; 107:1, 13,  
104:11, 22; 106:15, 23  
107:1, 13, 16  
**nor** 123:10, 10  
**notebook** 12:9, 10, 2  
13:12; 15:12, 16; 17:2  
25:25; 39:7; 58:12;  
115:13, 14; 12:9, 10, 2

13:12; 15:12; 16; 17:21;  
25:25; 39:7; 58:12;  
115:13, 14  
**noted** 49:23, 23  
**notes** 14:12; 96:22;  
14:12; 96:22  
**notice** 69:12, 12  
**noticed** 110:23, 23  
**notices** 6:9, 9  
**number** 6:14; 12:24;  
17:23; 30:5; 32:3; 44:19;  
53:17; 111:10; 112:7;  
6:14; 12:24; 17:23; 30:5;  
32:3; 44:19; 53:17;  
111:10; 112:7  
**numbers** 55:22, 22

## O

**O.C.G.A** 123:12, 12  
**object** 14:3; 36:25; 49:9;  
20:70:24; 71:17; 76:8;  
78:22; 80:17; 83:9; 90:7;  
93:1; 102:8; 118:14; 14:3;  
36:25; 49:9; 20:70:24;  
71:17; 76:8; 78:22; 80:17;  
83:9; 90:7; 93:1; 102:8;  
118:14  
**objection** 13:23; 49:16;  
18; 19; 22; 92:19; 117:19;  
13:23; 49:16; 18; 19; 22;  
92:19; 117:19  
**objections** 5:13, 13  
**objects** 12:17, 17  
**obviously** 6:17; 8:12;  
13:24; 24:14; 15; 25:18;  
28:1; 38:19; 47:21, 25;  
6:17; 8:12; 13:24; 24:14;  
15; 25:18; 28:1; 38:19;  
47:21, 25  
**occasions** 16:13, 13  
**occupation** 68:20, 20  
**Occupational** 25:23;  
39:6; 40:10; 25:23; 39:6;  
40:10  
**occur** 46:14; 54:4; 56:13;  
14; 46:14; 54:4; 56:13, 14  
**occurred** 41:19; 59:10;  
41:19; 59:10  
**occurring** 17:6; 42:20;  
55:22; 64:23; 17:6; 42:20;  
55:22; 64:23  
**off** 12:4; 6; 31:24; 51:11;  
62:11; 64:12; 66:8; 12:4; 6;  
31:24; 51:11; 62:11;  
64:12; 66:8  
**Office** 36:15, 15  
**officially** 33:13, 13  
**old** 15:15; 34:16; 53:19;  
15:15; 34:16; 53:19  
**Ollie** 5:8, 8  
**onboard** 93:12, 19, 12,  
19  
**once** 26:13, 13  
**one** 6:8; 17; 24; 7:12;

8:13; 14:2; 15:22; 17:23;  
18:13; 24; 27:15; 29:8, 22;  
32:8, 22; 34:24; 35:2;  
37:11, 16, 18, 22; 38:2, 3,  
3; 40:20, 22; 43:10, 11;  
44:22; 48:20; 51:22;  
52:19; 54:14; 58:6, 8, 20,  
23; 61:8; 64:1, 10, 17, 24;  
65:3, 4, 12, 21; 67:8; 68:5,  
6, 6, 7, 20; 73:6; 76:18;  
77:10, 17; 83:9; 86:3;  
98:23; 107:3; 116:6, 20;  
118:24; 119:8, 20; 123:14;  
6:8, 17; 24; 7:12; 8:13;  
14:2; 15:22; 17:23; 18:13,  
24; 27:15; 29:8, 22; 32:8,  
22; 34:24; 35:2; 37:11, 16,  
18, 22; 38:2, 3, 3; 40:20,  
22; 43:10, 11; 44:22;  
48:20; 51:22; 52:19;  
54:14; 58:6, 8, 20, 23;  
61:8; 64:1, 10, 17, 24;  
65:3, 4, 12, 21; 67:8; 68:5,  
6, 6, 7, 20; 73:6; 76:18;  
77:10, 17; 83:9; 86:3;  
98:23; 107:3; 116:6, 20;  
118:24; 119:8, 20; 123:14  
**ones** 6:21; 34:17; 54:4;  
58:24; 6:21; 34:17; 54:4;  
58:24  
**ongoing** 51:15, 19, 23;  
52:9; 51:15, 19, 23; 52:9  
**only** 10:15, 16; 17:2;  
21:10; 39:5; 44:12; 47:15;  
52:4; 65:10; 68:10; 69:10;  
70:21; 79:1; 95:10, 14;  
115:19; 10:15, 16; 17:2;  
21:10; 39:5; 44:12; 47:15;  
52:4; 65:10; 68:10; 69:10;  
70:21; 79:1; 95:10, 14;  
115:19  
**Ontario** 62:12, 12  
**operated** 85:9, 18, 21;  
86:5; 85:9, 18, 21; 86:5  
**operation** 109:12, 12  
**operations** 51:1, 1  
**opinion** 20:23; 21:6, 17,  
23; 25:20; 26:1; 56:6;  
67:25; 78:16; 80:20, 21;  
91:13; 95:16, 20, 25; 96:6;  
101:19; 103:14; 106:1, 21;  
107:19; 118:5; 20:23;  
21:6, 17, 23; 25:20; 26:1;  
56:6; 67:25; 78:16; 80:20,  
21; 91:13; 95:16, 20, 25;  
96:6; 101:19; 103:14;  
106:1, 21; 107:19; 118:5  
**opinions** 10:11; 24:15;  
67:21; 109:14, 22; 10:11;  
24:15; 67:21; 109:14, 22  
**opposed** 12:8; 20:7;  
29:14; 30:21; 36:8, 23;  
56:9; 116:2; 12:8; 20:7;  
29:14; 30:21; 36:8, 23;  
56:9; 116:2  
**opposite** 65:1, 1  
**order** 57:6; 63:11; 57:6;  
63:11  
**ore** 23:19; 26:13, 19;

27:1, 5, 6, 10; 23:19;  
26:13, 19; 27:1, 5, 6, 10  
**organization** 74:17;  
85:2; 74:17; 85:2  
**organizations** 41:8;  
75:6; 41:8; 75:6  
**orientation** 16:24, 24  
**original** 23:6; 123:14;  
23:6; 123:14  
**OSHA** 31:6; 32:25; 36:16;  
45:9, 16, 19, 24; 76:6, 11,  
12; 77:22; 78:7, 16; 79:1,  
6; 88:9, 14, 24; 91:15;  
92:4, 11, 21; 31:6; 32:25;  
36:16; 45:9, 16, 19, 24;  
76:6, 11, 12; 77:22; 78:7,  
16; 79:1, 6; 88:9, 14, 24;  
91:15; 92:4, 11, 21  
**others** 18:1; 20:15;  
39:13; 43:19; 44:14;  
45:14; 51:18; 73:1, 11;  
18:1; 20:15; 39:13; 43:19;  
44:14; 45:14; 51:18; 73:1,  
11  
**Ours** 113:14, 14  
**out** 7:2, 2; 12:19; 15:11;  
23:15, 19; 24:2, 9; 26:19;  
27:1, 7; 30:11; 36:16; 38:9;  
45:15; 47, 11; 49:4; 52:23;  
55:2, 19; 56:22; 62:6;  
69:16; 72:23; 76:11;  
95:25; 105:3, 16; 112:23;  
7:2, 2; 12:19; 15:11; 23:15,  
19; 24:2, 9; 26:19; 27:1, 7;  
30:11; 36:16; 38:9; 45:15;  
47:11; 49:4; 52:23; 55:2,  
19; 56:22; 62:6; 69:16;  
72:23; 76:11; 95:25;  
105:3, 16; 112:23  
**outright** 96:4, 4  
**over** 15:19; 18:16; 31:18;  
34:23; 60:25; 61:12; 63:7;  
70:2; 94:15; 97:9; 106:8;  
110:22; 111:7; 15:19;  
18:16; 31:18; 34:23;  
60:25; 61:12; 63:7; 70:2;  
94:15; 97:9; 106:8;  
110:22; 111:7  
**overall** 62:5, 5  
**overbreadth** 14:3, 3  
**overhead** 119:25, 25  
**overturned** 29:2, 2  
**own** 45:21, 21  
**owned** 85:2, 4, 6, 12, 18,  
20; 86:1, 5; 85:2, 4, 6, 12,  
18, 20; 86:1, 5

## P

**Pacific** 70:15, 19; 72:5;  
70:15, 19; 72:5  
**packet** 8:3, 3  
**page** 34:23; 35:13; 61:14,  
20; 62:17; 63:9; 65:8;  
68:10, 14, 16; 70:1;  
123:15, 17; 34:23; 35:13;  
61:14, 20; 62:17; 63:9;

65:8; 68:10, 14, 16; 70:1;  
123:15, 17  
**pages** 123:6, 6  
**paper** 10:2, 13, 14; 11:14;  
17:22, 23; 23:4, 7; 37:21;  
41:19, 20; 43:14; 47:3;  
105:12; 106:18, 21; 107:2,  
4, 11; 10:2, 13, 14; 11:14;  
17:22, 23; 23:4, 7; 37:21;  
41:19, 20; 43:14; 47:3;  
105:12; 106:18, 21; 107:2,  
4, 11  
**papers** 25:25; 43:10;  
25:25; 43:10  
**paragraph** 116:1, 1  
**part** 16:25; 47:25; 51:24;  
52:11; 53:25; 62:20; 68:3,  
9, 16; 77:6; 98:18; 16:25;  
47:25; 51:24; 52:11;  
53:25; 62:20; 68:3, 9, 16;  
77:6; 98:18  
**participated** 51:5; 59:22;  
76:15; 51:5; 59:22; 76:15  
**particles** 44:4; 53:14;  
79:13; 97:4; 100:8;  
108:24, 24; 44:4; 53:14;  
79:13; 97:4; 100:8;  
108:24, 24  
**particular** 21:5; 89:20;  
21:5; 89:20  
**particularly** 60:11, 11  
**particulate** 44:21, 25, 21,  
25  
**parties** 123:9, 10, 16, 9,  
10, 16  
**parts** 62:11, 14; 118:8;  
62:11, 14; 118:8  
**party** 123:13, 18, 20, 13,  
18, 20  
**pass** 61:12; 114:2; 61:12;  
114:2  
**passage** 39:6, 6  
**paying** 110:15, 15  
**PCM** 31:6, 10, 12, 13, 6,  
10, 12, 13  
**PCM-type** 44:13, 13  
**peer** 18:19, 22, 19, 22  
**peer-reviewed** 18:7;  
19:20; 18:7; 19:20  
**PEL** 31:6; 32:25; 33:7;  
45:9; 79:20; 31:6; 32:25;  
33:7; 45:9; 79:20  
**PELs** 32:24, 24  
**Pennsylvania** 35:7;  
40:15, 19, 20, 22; 35:7;  
40:15, 19, 20, 22  
**people** 9:5, 6; 64:17;  
72:13, 18; 73:9; 75:6;  
94:23; 101:3; 115:20; 9:5,  
6; 64:17; 72:13, 18; 73:9;  
75:6; 94:23; 101:3; 115:20  
**per** 31:3, 23; 44:4; 47:9;  
53:14; 79:13; 100:8;  
123:15, 17; 31:3, 23; 44:4;  
47:9; 53:14; 79:13; 100:8;  
123:15, 17  
**percent** 96:18; 110:25;

111:7, 16, 20; 96:18;  
110:25; 111:7, 16, 20  
**percentage** 111:4, 4  
**perhaps** 66:4, 4  
**period** 69:13; 71:16;  
75:24; 103:3, 7, 15, 19, 22;  
117:22; 69:13; 71:16;  
75:24; 103:3, 7, 15, 19, 22;  
117:22  
**peripheral** 54:6, 10, 6, 10  
**permissible** 30:25; 78:3;  
89:1; 91:15; 92:22; 109:9;  
30:25; 78:3; 89:1; 91:15;  
92:22; 109:9  
**permitted** 5:19; 31:1;  
5:19; 31:1  
**personal** 44:12, 24, 12,  
24  
**personally** 46:4; 109:18,  
25; 115:2; 46:4; 109:18,  
25; 115:2  
**persons** 68:19; 90:3;  
68:19; 90:3  
**perspective** 77:25, 25  
**pertaining** 50:15; 55:8;  
50:15; 55:8  
**pertains** 110:12, 12  
**Ph.D** 5:3; 22:4; 5:3; 22:4  
**Phase** 31:8; 43:21; 44:6,  
22; 92:12; 31:8; 43:21;  
44:6, 22; 92:12  
**Phoenix** 60:3, 12, 3, 12  
**phone** 7:19, 19  
**photographs** 11:20;  
14:13; 11:20; 14:13  
**phrase** 65:23, 23  
**physical** 88:10, 21, 10,  
21  
**physicians** 90:22, 22  
**pipe** 101:2, 2  
**Pittsburgh** 9:23; 10:6;  
67:20, 22, 25; 9:23; 10:6;  
67:20, 22, 25  
**place** 91:12, 12  
**placed** 112:15; 113:5, 17;  
112:15; 113:5, 17  
**plaintiff's** 20:17; 49:17,  
21; 50:4; 90:17; 114:18;  
20:17; 49:17, 21; 50:4;  
90:17; 114:18  
**plaintiffs** 114:10, 12, 10,  
12  
**plant** 16:16, 18, 19, 22,  
25; 17:2; 25:9; 39:25; 40:2,  
4, 5, 14, 15, 17, 18, 19, 20,  
22, 23; 44:8; 64:5, 10, 13;  
69:13, 23; 116:2; 16:16,  
18, 19, 22, 25; 17:2; 25:9;  
39:25; 40:2, 4, 5, 14, 15,  
17, 18, 19, 20, 22, 23;  
44:8; 64:5, 10, 13; 69:13,  
23; 116:2  
**plants** 17:10; 35:25;  
57:24; 62:11, 15; 97:15;  
17:10; 35:25; 57:24;  
62:11, 15; 97:15

plaques 91:5, 5  
please 37:9; 39:4;  
116:22; 37:9; 39:4; 116:22  
pleural 91:5, 5  
point 14:20; 27:2; 42:10;  
47:10; 48:17; 49:16;  
53:23; 56:7; 57:19; 62:6;  
77:4; 80:1; 91:21; 96:17;  
14:20; 27:2; 42:10; 47:10;  
48:17; 49:16; 53:23; 56:7;  
57:19; 62:6; 77:4; 80:1;  
91:21; 96:17  
pointing 30:11, 11  
points 116:18, 18  
policy 32:21, 21  
Poor 23:12, 12  
poor-quality 35:17, 17  
poorly-ventilated 97:15,  
15  
popped 11:16, 16  
population 54:12; 56:15;  
57:18; 102:19; 104:13, 24;  
106:3, 8, 17; 54:12; 56:15;  
57:18; 102:19; 104:13, 24;  
106:3, 8, 17  
populations 56:9, 9, 13;  
58:1; 56:9, 9, 13; 58:1  
portion 12:13; 68:10;  
12:13; 68:10  
position 32:17, 17  
possibility 54:15, 15  
possible 55:9; 64:21;  
66:6; 96:4; 55:9; 64:21;  
66:6; 96:4  
Possibly 6:25; 14:24;  
108:1; 6:25; 14:24; 108:1  
post 31:20, 20  
posted 79:3, 3  
potential 23:22; 75:1, 14;  
78:8; 80:10; 93:13;  
103:25; 23:22; 75:1, 14;  
78:8; 80:10; 93:13; 103:25  
Potentially 6:3, 3  
practical 99:7, 7  
pre-published 56:1, 1  
predecessor 50:16, 16  
predominantly 53:4, 4  
preparation 15:20;  
44:16, 18; 15:20; 44:16, 18  
prepared 15:8, 9, 13;  
112:13; 113:3; 15:8, 9, 13;  
112:13; 113:3  
prepares 8:15, 15  
preponderance 66:13,  
16, 19, 13, 16, 19  
presentations 45:23, 25,  
23, 25  
presented 21:5; 59:21;  
69:10; 106:13; 21:5;  
59:21; 69:10; 106:13  
President 75:10, 10  
presumption 22:2, 2  
pretty 10:21; 11:1; 38:11,  
23; 52:21; 10:21; 11:1;  
38:11, 23; 52:21

prevent 48:11; 117:17;  
48:11; 117:17  
prevention 30:9, 10, 9,  
10  
previously 85:2, 2  
principal 12:1, 1  
principally 9:22; 25:2;  
36:20, 22; 37:1; 42:8;  
50:24; 9:22; 25:2; 36:20,  
22; 37:1; 42:8; 50:24  
print 58:20, 20  
prints 7:2, 2, 2, 2  
prior 34:7, 9; 41:19; 44:1;  
59:16; 85:12; 91:5; 105:5;  
34:7, 9; 41:19; 44:1; 59:16;  
85:12; 91:5; 105:5  
prisons 75:12, 12  
private 113:2, 2  
Probably 6:22; 7:4, 11;  
9:24; 13:9; 22:18; 51:17;  
62:6; 83:16; 96:16;  
111:12; 6:22; 7:4, 11; 9:24;  
13:9; 22:18; 51:17; 62:6;  
83:16; 96:16; 111:12  
Procedure 5:18, 18  
proceedings 43:16, 16  
process 16:15; 27:2, 8;  
38:22; 47:20; 55:25;  
16:15; 27:2, 8; 38:22;  
47:20; 55:25  
processes 86:9, 15, 9, 15  
processing 26:12, 16,  
12, 16  
proclamation 69:3, 3  
produce 11:19, 19  
produced 13:11; 14:6;  
46:9; 13:11; 14:6; 46:9  
product 70:5; 72:25;  
83:5, 20, 23; 84:2, 12, 16;  
112:15; 113:4, 12; 114:1;  
70:5; 72:25; 83:5, 20, 23;  
84:2, 12, 16; 112:15;  
113:4, 12; 114:1  
production 123:18, 18  
products 8:17; 19:23;  
26:15; 27:3; 36:3, 23; 41:1,  
4; 59:23; 71:3; 73:2; 76:5;  
79:2; 82:25; 87:2, 19;  
91:10; 101:4; 112:11;  
113:9, 18, 22; 115:4;  
119:25; 8:17; 19:23;  
26:15; 27:3; 36:3, 23; 41:1,  
4; 59:23; 71:3; 73:2; 76:5;  
79:2; 82:25; 87:2, 19;  
91:10; 101:4; 112:11;  
113:9, 18, 22; 115:4;  
119:25  
programs 109:19, 19  
progress 102:14, 14  
progresses 102:6, 6  
prohibited 28:24, 24  
project 117:11, 11  
projected 60:16, 16  
promulgated 33:11, 11  
pronounce 17:24, 24  
pronouncement 69:3, 3

proper 49:14, 14  
properties 48:6, 6  
proposed 29:15, 15  
proposition 57:4, 4  
protect 92:5; 93:6, 7;  
95:10; 92:5; 93:6, 7; 95:10  
protection 89:3, 7, 3, 7  
protective 109:17; 110:3;  
109:17; 110:3  
prove 22:24; 23:23; 24:1;  
22:24; 23:23; 24:1  
provide 76:1, 1  
provided 7:25; 8:3, 23;  
14:14; 16:7; 79:17; 87:23;  
7:25; 8:3, 23; 14:14; 16:7;  
79:17; 87:23  
provides 56:25, 25  
provision 93:3, 3  
proximity 23:6, 6  
Public 36:16; 56:12;  
74:10, 13, 21, 25; 75:4, 13;  
77:3; 78:7, 17; 93:11, 18;  
95:19; 96:7; 99:13;  
100:20, 23; 112:10; 36:16;  
56:12; 74:10, 13, 21, 25;  
75:4, 13; 77:3; 78:7, 17;  
93:11, 18; 95:19; 96:7;  
99:13; 100:20, 23; 112:10  
publication 40:4, 12;  
43:8; 56:10; 100:16, 20;  
104:25; 106:11; 40:4, 12;  
43:8; 56:10; 100:16, 20;  
104:25; 106:11  
publications 6:25; 7:7,  
12; 43:12; 104:20; 105:5;  
109:21, 21; 6:25; 7:7, 12;  
43:12; 104:20; 105:5;  
109:21, 21  
publish 95:15, 20;  
106:21; 95:15, 20; 106:21  
published 18:6, 19, 22;  
24:4; 25:22; 33:25; 37:25;  
40:9; 41:25; 50:23; 51:2,  
24; 52:5, 12, 14, 17; 55:25;  
76:4; 87:3, 6, 9, 12; 93:23;  
102:12; 105:19; 106:1, 25;  
107:6, 6; 109:14, 18, 22;  
18:6, 19, 22; 24:4; 25:22;  
33:25; 37:25; 40:9; 41:25;  
50:23; 51:2, 24; 52:5, 12,  
14, 17; 55:25; 76:4; 87:3,  
6, 9, 12; 93:23; 102:12;  
105:19; 106:1, 25; 107:6,  
6; 109:14, 18, 22  
pull 34:16; 44:9; 34:16;  
44:9  
pulled 12:19, 25; 15:11;  
18:12, 13; 12:19, 25;  
15:11; 18:12, 13  
pure 26:4, 6, 10, 11; 99:7;  
26:4, 6, 10, 11; 99:7  
purposes 5:18; 26:25;  
99:7; 5:18; 26:25; 99:7  
pursuant 5:12, 17;  
123:12; 5:12, 17; 123:12  
put 9:12; 12:14; 15:15;  
24:2; 27:25; 30:13; 35:20;

50:3; 51:11; 52:20; 53:18;  
54:3, 22; 57:11, 11; 61:6;  
76:11; 77:2, 4; 79:2; 86:14;  
93:3; 100:19; 107:24;  
111:3, 10; 112:23; 9:12;  
12:14; 15:15; 24:2; 27:25;  
30:13; 35:20; 50:3; 51:11;  
52:20; 53:18; 54:3, 22;  
57:11, 11; 61:6; 76:11;  
77:2, 4; 79:2; 86:14; 93:3;  
100:19; 107:24; 111:3, 10;  
112:23  
putting 76:18, 18

## Q

quality 36:22, 22  
quantification 47:1, 1  
quantifications 46:16,  
19, 16, 19  
quantified 46:12, 12  
quantify 17:18; 19:3;  
20:2; 22:23; 60:15; 108:2;  
17:18; 19:3; 20:2; 22:23;  
60:15; 108:2  
quantifying 18:17;  
19:21; 18:17; 19:21  
quantity 32:3, 3  
quarter 91:9, 9  
Quebec 52:13, 13  
quick 110:6, 6  
quicker 55:2, 2  
quickly 13:8; 61:13; 13:8;  
61:13  
quite 24:25; 62:8; 24:25;  
62:8  
quote 35:21, 23, 21, 23

## R

R-E-I-T-Z-E 73:8, 8  
R-O-H-L 17:24, 24  
range 103:8, 8  
Raper 7:24; 8:1, 3, 20, 24;  
13:15; 15:9, 12; 20:14, 19,  
22, 24; 21:17; 33:18; 68:4,  
13; 69:9; 70:23; 71:22;  
79:19; 87:24; 88:20; 89:5;  
91:2; 119:4, 17; 7:24; 8:1,  
3, 20, 24; 13:15; 15:9, 12;  
20:14, 19, 22, 24; 21:17;  
33:18; 68:4, 13; 69:9;  
70:23; 71:22; 79:19;  
87:24; 88:20; 89:5; 91:2;  
119:4, 17  
Raper's 8:18; 21:9; 71:9,  
14; 90:17; 8:18; 21:9; 71:9,  
14; 90:17  
rapid 103:18, 18  
rapidly 102:6, 14, 6, 14  
rarely 26:6, 6  
rate 54:9; 56:14; 59:13;  
54:9; 56:14; 59:13  
rates 23:6; 24:6, 6; 55:4,  
4; 23:6; 24:6, 6; 55:4, 4  
rather 52:23; 61:13;  
83:14; 97:15; 52:23;  
61:13; 83:14; 97:15  
raw 97:14, 14  
Raybestos 25:1, 8;  
39:24; 40:2, 14, 18; 25:  
8; 39:24; 40:2, 14, 18  
reaction 102:3, 3  
read 6:1; 14:8, 23; 35:  
52:19; 56:2; 58:12, 14;  
60:24; 62:20; 63:1; 67:  
71:7; 105:15; 6:1; 14:8;  
35:20; 52:19; 56:2; 58:  
14; 60:24; 62:20; 63:1;  
67:13; 71:7; 105:15  
reading 5:21; 62:3; 5:  
62:3  
Reagan 75:10, 10  
real 13:7, 7  
really 17:1, 3; 21:2;  
23:14; 26:11, 24; 27:17;  
15; 30:15; 36:6; 68:12;  
91:19; 17:1, 3; 21:2; 23:  
26:11, 24; 27:13, 15;  
30:15; 36:6; 68:12; 91:  
reason 53:24; 70:22;  
53:24; 70:22  
rebuttal 10:3, 4, 3, 4  
recall 24:3; 58:16; 59:  
81:5, 9; 82:16; 85:7, 16  
92:8; 94:9; 24:3; 58:16;  
59:4; 81:5, 9; 82:16; 85:  
16; 92:8; 94:9  
receive 123:13, 13  
received 20:22; 68:13;  
69:11; 20:22; 68:13; 69:  
receives 109:3, 3  
receiving 91:5, 5  
recently 58:15; 74:13;  
75:25; 58:15; 74:13; 75:  
Recess 66:10; 83:17;  
110:7; 66:10; 83:17; 11  
recollection 38:19;  
106:19; 107:5; 38:19;  
106:19; 107:5  
recommend 93:5; 113:  
21; 93:5; 113:8, 21  
recommendation 32:  
11; 76:21; 91:9; 95:12;  
96:1, 7; 99:24; 112:22;  
32:6, 11; 76:21; 91:9;  
95:12; 96:1, 7; 99:24;  
112:22  
recommendations  
32:22; 77:22, 23; 79:23  
80:2; 91:14; 92:21, 23;  
107:24; 109:20; 113:14  
32:22; 77:22, 23; 79:23  
80:2; 91:14; 92:21, 23;  
107:24; 109:20; 113:14  
recommended 78:3;  
91:16; 92:4, 10; 93:11;  
96:3; 97:19; 99:10; 100:  
107:25; 112:10; 113:17  
116:24; 117:1; 118:1;  
78:3; 91:16; 92:4, 10;  
93:11; 96:3; 97:19; 99:

100:1; 107:25; 112:10;  
113:17; 116:24; 117:1;  
118:1  
**record** 12:4, 6; 50:23;  
66:9; 12:4, 6; 50:23; 66:9  
**recordings** 15:23, 23  
**records** 9:1; 14:13, 18;  
28:14; 9:1; 14:13, 18;  
28:14  
**RECROSS-  
EXAMINATION** 119:1,  
10, 21, 1, 10, 21  
**red** 35:21, 21  
**reduce** 92:13; 96:12;  
118:3; 92:13; 96:12; 118:3  
**reduced** 123:4, 4  
**refer** 26:4; 42:13; 70:18;  
98:11; 26:4; 42:13; 70:18;  
98:11  
**reference** 38:17; 75:25;  
38:17; 75:25  
**references** 12:20, 20  
**referred** 19:10; 47:18;  
98:10; 19:10; 47:18; 98:10  
**referring** 25:7; 39:19;  
47:18; 73:5; 76:9; 101:5;  
105:1; 25:7; 39:19; 47:18;  
73:5; 76:9; 101:5; 105:1  
**refractory** 55:16, 17, 19,  
24, 16, 17, 19, 24  
**refueling** 50:25, 25  
**regard** 14:15; 66:12;  
116:23; 118:6; 14:15;  
66:12; 116:23; 118:6  
**regarding** 10:11; 72:9;  
114:18; 115:3; 10:11;  
72:9; 114:18; 115:3  
**regardless** 86:13, 13  
**register** 49:16, 16  
**regular** 8:16, 16  
**regulation** 28:23; 75:19,  
19; 88:12; 28:23; 75:19,  
19; 88:12  
**regulations** 13:18;  
28:17; 29:5, 14, 17; 31:17,  
20; 33:11; 76:7; 79:6; 88:9;  
13:18; 28:17; 29:5, 14, 17;  
31:17; 20; 33:11; 76:7;  
79:6; 88:9  
**Reitze** 73:7, 7  
**related** 22:10; 41:20;  
45:4; 103:8; 114:24;  
119:24; 22:10; 41:20;  
45:4; 103:8; 114:24;  
119:24  
**relates** 51:3; 82:8; 51:3;  
82:8  
**relationship** 103:25, 25  
**relationships** 43:15, 15  
**relative** 57:5, 13, 15, 5,  
13, 15  
**release** 59:23; 82:25;  
83:5, 20, 23; 84:2, 8, 12,  
16; 87:3, 7, 10, 13; 90:11;  
115:4; 119:23; 59:23;  
82:25; 83:5, 20, 23; 84:2,

8, 12, 16; 87:3, 7, 10, 13;  
90:11; 115:4; 119:23  
**released** 17:19; 18:2, 17;  
19:4, 22; 20:3; 48:7; 17:19;  
18:2, 17; 19:4, 22; 20:3;  
48:7  
**relevant** 118:10, 10  
**reliable** 117:6, 6  
**relied** 13:19; 18:4; 13:19;  
18:4  
**RELs** 107:25, 25  
**rely** 12:2; 68:12; 117:7;  
12:2; 68:12; 117:7  
**relying** 21:24, 24  
**remember** 11:14; 17:11;  
32:13; 53:17; 54:2; 58:24;  
59:3; 71:18; 86:3; 115:22;  
116:5; 11:14; 17:11;  
32:13; 53:17; 54:2; 58:24;  
59:3; 71:18; 86:3; 115:22;  
116:5  
**repair** 18:2; 19:12; 57:23;  
60:16; 18:2; 19:12; 57:23;  
60:16  
**rephrase** 102:1; 108:3;  
102:1; 108:3  
**report** 8:12; 34:25; 36:15,  
17; 40:6; 56:24; 64:14;  
97:25; 98:4, 6; 99:17, 20;  
100:12; 101:13, 15;  
111:24; 112:6; 8:12;  
34:25; 36:15, 17; 40:6;  
56:24; 64:14; 97:25; 98:4,  
6; 99:17, 20; 100:12;  
101:13, 15; 111:24; 112:6  
**reported** 99:16; 100:15,  
15; 104:10; 106:6; 107:9,  
10, 12; 123:3; 99:16;  
100:15, 15; 104:10; 106:6;  
107:9, 10, 12; 123:3  
**reports** 18:7, 20; 20:17;  
21:22, 24; 34:7, 13, 21, 22;  
39:19, 19; 40:7; 41:15, 16,  
18; 42:20; 56:17; 57:1;  
112:2; 18:7, 20; 20:17;  
21:22, 24; 34:7, 13, 21, 22;  
39:19, 19; 40:7; 41:15, 16,  
18; 42:20; 56:17; 57:1;  
112:2  
**represent** 16:6; 24:15,  
16; 48:22; 50:13; 114:8;  
123:6; 16:6; 24:15, 16;  
48:22; 50:13; 114:8; 123:6  
**representative** 86:9, 16,  
9, 16  
**representatives** 81:2, 7,  
11, 15, 19, 23; 82:2, 6, 12,  
21; 114:24; 81:2, 7, 11, 15,  
19, 23; 82:2, 6, 12, 21;  
114:24  
**representing** 70:15;  
95:9; 70:15; 95:9  
**reproduction** 35:17, 17  
**request** 13:24; 14:3;  
13:24; 14:3  
**requested** 9:6, 6  
**required** 45:6; 79:1, 1, 3,

12; 88:9, 15, 20; 89:2, 6;  
45:6; 79:1, 1, 3, 12; 88:9,  
15, 20; 89:2, 6  
**requirements** 45:17, 17  
**requires** 44:23, 23  
**research** 72:21; 78:18;  
103:24; 104:7, 21; 72:21;  
78:18; 103:24; 104:7, 21  
**reservations** 75:7, 12, 7,  
12  
**reserved** 5:15, 15  
**residence** 54:23, 23  
**resins** 47:22; 48:4; 47:22;  
48:4  
**respect** 16:7; 68:18;  
71:15; 73:16; 16:7; 68:18;  
71:15; 73:16  
**respirable** 55:23, 23  
**respirator** 109:19, 24,  
19, 24  
**respiratory** 89:3, 6;  
109:17; 110:2; 89:3, 6;  
109:17; 110:2  
**respond** 49:11, 24, 25,  
11, 24, 25  
**response** 13:11; 30:6;  
13:11; 30:6  
**responsibility** 75:5, 11,  
5, 11  
**responsive** 16:2, 2  
**responsiveness** 5:14,  
14  
**rest** 8:18; 20:18, 19;  
91:20; 8:18; 20:18, 19;  
91:20  
**result** 123:11, 11  
**results** 17:17; 40:7;  
51:23; 52:4, 24; 79:18;  
17:17; 40:7; 51:23; 52:4,  
24; 79:18  
**retained** 48:11, 11  
**retired** 96:13, 13  
**revealed** 63:16, 16  
**review** 18:19, 22; 21:8;  
33:21; 61:19; 69:8; 70:18;  
88:6; 114:9; 119:3; 18:19,  
22; 21:8; 33:21; 61:19;  
69:8; 70:18; 88:6; 114:9;  
119:3  
**reviewed** 81:1, 6, 10, 14,  
18, 22; 82:1, 5, 11, 17, 20,  
24; 83:4, 19, 22; 84:1, 7,  
11, 15; 85:25; 90:10;  
114:19, 22; 115:3; 81:1, 6,  
10, 14, 18, 22; 82:1, 5, 11,  
17, 20, 24; 83:4, 19, 22;  
84:1, 7, 11, 15; 85:25;  
90:10; 114:19, 22; 115:3  
**reviewing** 82:16, 16  
**reviews** 19:19, 19  
**RICHARD** 5:3, 3  
**right** 5:25; 6:19, 20; 7:14;  
8:3, 6; 12:15; 16:20; 17:11;  
18:21; 19:8, 15, 24; 20:11;  
21:4, 12; 24:11, 13; 25:14;  
28:21; 29:7; 31:1, 4, 7, 21,

23; 33:2; 34:23; 35:19;  
36:4, 8; 37:14, 15, 20;  
45:7, 22; 47:23, 24; 48:2;  
53:1; 58:5; 61:2; 62:8, 10,  
10, 13, 25; 63:14, 25; 64:3,  
20; 65:6; 69:6; 70:9; 84:6;  
95:3; 96:8; 115:18; 118:6;  
5:25; 6:19, 20; 7:14; 8:3, 6;  
12:15; 16:20; 17:11;  
18:21; 19:8, 15, 24; 20:11;  
21:4, 12; 24:11, 13; 25:14;  
28:21; 29:7; 31:1, 4, 7, 21,  
23; 33:2; 34:23; 35:19;  
36:4, 8; 37:14, 15, 20;  
45:7, 22; 47:23, 24; 48:2;  
53:1; 58:5; 61:2; 62:8, 10,  
10, 13, 25; 63:14, 25; 64:3,  
20; 65:6; 69:6; 70:9; 84:6;  
95:3; 96:8; 115:18; 118:6  
**Riley** 82:3; 83:24; 86:5;  
82:3; 83:24; 86:5  
**risk** 34:11; 37:24; 56:8;  
57:5, 15, 25; 59:8; 63:16;  
64:22; 68:22, 22; 72:15,  
19; 73:2, 7; 80:10; 89:22;  
90:4; 92:13, 14; 94:2;  
96:12; 102:17, 24; 104:3,  
12, 23; 106:2, 7, 16, 22,  
25; 107:12, 14; 117:11, 12;  
118:4, 5; 34:11; 37:24;  
56:8; 57:5, 15, 25; 59:8;  
63:16; 64:22; 68:22, 22;  
72:15, 19; 73:2, 7; 80:10;  
89:22; 90:4; 92:13, 14;  
94:2; 96:12; 102:17, 24;  
104:3, 12, 23; 106:2, 7, 16,  
22, 25; 107:12, 14; 117:11,  
12; 118:4, 5  
**risks** 57:13; 66:5; 57:13;  
66:5  
**Roach** 95:9, 9  
**Robb** 8:13; 20:18; 8:13;  
20:18  
**Robinson** 40:12, 12  
**Rodelsperger** 58:10;  
59:12; 58:10; 59:12  
**Rohl** 17:23, 24; 19:10;  
17:23, 24; 19:10  
**role** 76:17, 18, 22, 17, 18,  
22  
**room** 11:14, 14  
**rope** 36:2, 2  
**roughly** 53:14, 19, 14, 19  
**RPR** 123:24, 24  
**Ruberoid** 81:8; 83:6;  
85:18; 81:8; 83:6; 85:18  
**Rules** 5:17; 49:19; 5:17;  
49:19  
**run** 6:12; 18:24; 6:12;  
18:24  
**running** 115:17, 17  
**Russia** 52:2, 2  
**Russian** 52:3, 3

## S

**safe** 95:10, 14; 107:19,  
20; 108:1, 6, 14, 18; 95:10,  
14; 107:19, 20; 108:1, 6,  
14, 18  
**Safety** 7:6; 39:6; 80:23;  
7:6; 39:6; 80:23  
**same** 31:13; 46:18; 57:3;  
75:24; 85:5; 31:13; 46:18;  
57:3; 75:24; 85:5  
**sample** 44:20, 20  
**sampled** 46:1, 1  
**samplers** 44:7, 7  
**samples** 44:12, 13, 24;  
52:6, 7; 44:12, 13, 24;  
52:6, 7  
**sampling** 16:22; 44:4;  
45:15, 17, 24, 25; 79:18;  
16:22; 44:4; 45:15, 17, 24,  
25; 79:18  
**samplings** 43:22, 22  
**saw** 70:3; 89:5; 70:3; 89:5  
**sawing** 36:17, 17  
**saying** 57:3; 76:12;  
103:11; 104:16; 57:3;  
76:12; 103:11; 104:16  
**school** 32:2, 2  
**schools** 31:21, 21  
**Science** 7:5; 77:24;  
106:14; 108:6; 7:5; 77:24;  
106:14; 108:6  
**Sciences** 40:10; 94:14;  
40:10; 94:14  
**scientific** 28:5, 7; 43:8,  
12; 78:18; 28:5, 7; 43:8,  
12; 78:18  
**Scientifically** 65:25, 25  
**scientist** 93:10, 10  
**seal** 100:16, 19, 16, 19  
**sealant** 89:17, 17  
**sealants** 87:14, 17, 14,  
17  
**search** 12:23, 24; 38:9;  
12:23, 24; 38:9  
**searches** 15:13, 13  
**Second** 7:23; 34:3;  
40:12; 43:10; 66:9; 68:16;  
94:17, 17; 105:13; 7:23;  
34:3; 40:12; 43:10; 66:9;  
68:16; 94:17, 17; 105:13  
**section** 95:8, 8  
**selected** 12:24; 106:25;  
12:24; 106:25  
**Selikoff** 72:21; 73:5;  
95:15; 102:12; 104:10, 21;  
105:2, 9, 20, 24; 106:20;  
72:21; 73:5; 95:15;  
102:12; 104:10, 21; 105:2,  
9, 20, 24; 106:20  
**Selikoff's** 89:25; 104:7,  
20; 89:25; 104:7, 20  
**seminars** 15:25, 25  
**send** 32:4, 4

senior 40:11, 11  
sent 68:6, 9; 115:13; 68:6,  
9; 115:13  
separate 27:5; 83:15;  
27:5; 83:15  
September 74:18, 18  
series 43:18, 18  
serpentine 25:19; 33:2;  
25:19; 33:2  
Service 36:16; 74:10, 13,  
21, 25; 75:4, 13; 77:3;  
78:7, 17; 93:11, 18; 95:20;  
96:7; 99:14; 100:21;  
112:10; 36:16; 74:10, 13,  
21, 25; 75:4, 13; 77:3;  
78:7, 17; 93:11, 18; 95:20;  
96:7; 99:14; 100:21;  
112:10  
Services 100:23, 23  
seven 67:25, 25  
several 15:15; 16:13;  
35:24; 52:6; 74:7; 15:15;  
16:13; 35:24; 52:6; 74:7  
severe 102:15; 103:18;  
102:15; 103:18  
sheets 8:15, 15  
shipped 27:7, 7  
ships 93:12, 19, 12, 19  
short 70:8, 8  
short-circuit 52:22, 22  
shorten 83:8, 8  
shorter 42:16; 66:21;  
103:19, 21; 42:16; 66:21;  
103:19, 21  
shorthand 104:18, 18  
shorthanded 104:18, 18  
shoulder 60:25; 63:7;  
60:25; 63:7  
show 6:8; 24:5, 8; 35:15;  
72:12; 6:8; 24:5, 8; 35:15;  
72:12  
showing 57:25; 61:6;  
72:24; 76:20; 102:23;  
57:25; 61:6; 72:24; 76:20;  
102:23  
shown 50:15; 55:21;  
70:20; 102:19; 111:16, 20;  
50:15; 55:21; 70:20;  
102:19; 111:16, 20  
shows 73:6; 116:1;  
118:15; 73:6; 116:1;  
118:15  
Siberian 52:2, 2  
side 51:12, 12  
SIENI 114:4, 4  
Signal 50:13, 15, 13, 15  
signature 5:24; 6:1; 5:24;  
6:1  
significance 118:11, 11  
significant 56:15; 57:15;  
56:15; 57:15  
significantly 61:16;  
62:19; 61:16; 62:19  
significantly-increased  
62:1, 1

signing 5:21, 21  
signs 87:25, 25  
simply 9:11; 49:17;  
54:22; 9:11; 49:17; 54:22  
Sinai 95:5, 6, 5, 6  
sit 44:8, 8  
sites 8:17, 17  
sitting 83:14, 14  
six 9:24; 11:13; 14:25;  
52:18; 53:14; 9:24; 11:13;  
14:25; 52:18; 53:14  
size 47:13; 57:14; 47:13;  
57:14  
skipped 94:15, 15  
smaller 66:18, 18  
smoke 101:19; 102:2;  
108:18; 112:2; 101:19;  
102:2; 108:18; 112:2  
smoker 102:6, 25, 6, 25  
smokers 102:15; 104:9;  
105:10, 21, 25; 102:15;  
104:9; 105:10, 21, 25  
smoking 110:24, 25;  
111:6, 11, 15, 19; 110:24,  
25; 111:6, 11, 15, 19  
SMR 61:17; 62:1, 19, 23;  
61:17; 62:1, 19, 23  
SMRs 65:11, 14, 11, 14  
solely 56:5, 5  
solvent 17:12, 12  
somebody 118:19, 19  
somehow 38:3, 3  
someone 23:16; 109:8;  
23:16; 109:8  
sometime 5:22; 58:14;  
5:22; 58:14  
sometimes 38:13, 13  
somewhat 45:12, 12  
somewhere 9:25; 33:23;  
47:8; 53:16; 60:23; 103:5;  
106:24; 111:23; 112:4;  
9:25; 33:23; 47:8; 53:16;  
60:23; 103:5; 106:24;  
111:23; 112:4  
sorry 15:7; 35:18; 43:4;  
61:20; 73:25; 85:25;  
91:23; 112:1; 117:24;  
15:7; 35:18; 43:4; 61:20;  
73:25; 85:25; 91:23;  
112:1; 117:24  
sound 56:25, 25  
South 23:8; 40:18; 42:6;  
43:17; 51:21; 69:23, 25;  
23:8; 40:18; 42:6; 43:17;  
51:21; 69:23, 25  
specific 12:19; 29:11;  
89:19; 109:23; 113:12, 25;  
114:1; 12:19; 29:11;  
89:19; 109:23; 113:12, 25;  
114:1  
specifically 10:19;  
15:16; 24:23; 41:10; 46:8;  
50:21; 57:8; 71:3; 73:4;  
89:25; 94:18; 10:19;  
15:16; 24:23; 41:10; 46:8;  
50:21; 57:8; 71:3; 73:4;

89:25; 94:18  
speeches 15:25, 25  
spent 11:13; 14:21, 25;  
40:21; 11:13; 14:21, 25;  
40:21  
spoke 93:18, 18  
standard 49:1, 2; 53:19;  
54:12; 76:12, 23; 77:8;  
92:11; 99:24; 116:24;  
117:1; 123:14, 16; 49:1, 2;  
53:19; 54:12; 76:12, 23;  
77:8; 92:11; 99:24;  
116:24; 117:1; 123:14, 16  
standards 13:17; 32:20;  
112:18; 13:17; 32:20;  
112:18  
start 18:16; 31:18; 18:16;  
31:18  
started 40:23; 42:20, 21;  
59:15; 40:23; 42:20, 21;  
59:15  
starts 5:22, 22  
state 35:24; 68:21; 79:11;  
86:8, 14; 123:1; 35:24;  
68:21; 79:11; 86:8, 14;  
123:1  
state-of-the-art 9:21;  
10:1; 11:24; 12:2; 9:21;  
10:1; 11:24; 12:2  
stated 105:2; 117:9;  
118:3; 123:3; 105:2;  
117:9; 118:3; 123:3  
statement 95:22; 96:4;  
95:22; 96:4  
States 28:21; 32:24; 40:6;  
74:25; 75:18; 98:21;  
101:4; 111:3; 28:21;  
32:24; 40:6; 74:25; 75:18;  
98:21; 101:4; 111:3  
stating 49:18; 69:4;  
49:18; 69:4  
Stationary 36:14, 14  
statistical 117:3, 3  
statistically 117:6, 6  
Statistics 98:9, 9  
stay 47:23; 105:13;  
47:23; 105:13  
Stayner 56:11; 60:20;  
56:11; 60:20  
step 99:25, 25  
still 48:10; 51:20; 52:9;  
56:6, 15, 17; 59:18; 66:11,  
20; 75:12; 48:10; 51:20;  
52:9; 56:6, 15, 17; 59:18;  
66:11, 20; 75:12  
Stoker 82:3; 83:24; 86:5;  
82:3; 83:24; 86:5  
Stone 37:17, 17  
stop 24:19; 35:1; 24:19;  
35:1  
stopped 33:19, 19  
straight 24:17; 50:24;  
24:17; 50:24  
stream 112:15; 113:5;  
112:15; 113:5  
strictly 118:19, 19

strike 24:11, 12, 11, 12  
strip 26:20, 20  
strip-type 26:23, 23  
strong 56:18, 18  
studied 26:15; 62:11;  
75:1; 26:15; 62:11; 75:1  
studies 23:1, 3, 9, 11, 20;  
24:25; 26:9; 27:16, 20;  
30:2; 34:8, 10, 14; 42:11;  
46:22; 51:12; 55:4, 7, 13,  
14, 18, 20; 57:3; 58:2;  
72:9, 12, 17, 23; 73:5;  
82:25; 83:5, 19, 23; 84:2,  
8, 12, 16; 89:18; 90:11;  
97:12; 102:12; 115:3;  
119:12, 24; 23:1, 3, 9, 11,  
20; 24:25; 26:9; 27:16, 20;  
30:2; 34:8, 10, 14; 42:11;  
46:22; 51:12; 55:4, 7, 13,  
14, 18, 20; 57:3; 58:2;  
72:9, 12, 17, 23; 73:5;  
82:25; 83:5, 19, 23; 84:2,  
8, 12, 16; 89:18; 90:11;  
97:12; 102:12; 115:3;  
119:12, 24  
study 29:22; 30:9; 34:5;  
35:11; 36:20; 40:3, 8, 23;  
42:1; 43:2; 51:19, 23; 52:1,  
2; 56:18; 57:23; 64:4;  
65:10; 73:7, 15; 89:10, 15,  
22, 24; 90:3, 5, 6, 9; 97:8,  
22; 98:1, 20, 21; 99:5, 14,  
16; 100:6, 14; 101:2, 5, 8,  
9, 12, 15; 29:22; 30:9;  
34:5; 35:11; 36:20; 40:3, 8,  
23; 42:1; 43:2; 51:19, 23;  
52:1, 2; 56:18; 57:23; 64:4;  
65:10; 73:7, 15; 89:10, 15,  
22, 24; 90:3, 5, 6, 9; 97:8,  
22; 98:1, 20, 21; 99:5, 14,  
16; 100:6, 14; 101:2, 5, 8,  
9, 12, 15  
studying 42:6; 57:18;  
59:12; 42:6; 57:18; 59:12  
subcohort 65:10, 10  
subjects 65:17, 17  
subsequent 118:2, 2  
substantially 118:4, 4  
substantiate 22:1, 1  
substitution 96:3, 3  
summaries 52:25; 58:9;  
52:25; 58:9  
summarize 52:24, 24  
summary 9:8; 58:11;  
59:6; 60:10; 9:8; 58:11;  
59:6; 60:10  
supervision 112:23, 23  
support 20:23, 23  
supporting 13:18, 18  
suppress 97:19; 99:11,  
24; 97:19; 99:11, 24  
suppression 30:10, 10  
sure 14:1; 18:9; 20:11;  
26:17; 31:12; 32:2; 38:11,  
23, 25; 43:23; 44:17;  
48:15; 63:4; 78:13;  
101:23; 107:9; 111:4;

116:6, 18; 14:1; 18:9;  
20:11; 26:17; 31:12; 3;  
38:11, 23, 25; 43:23;  
44:17; 48:15; 63:4; 78;  
101:23; 107:9; 111:4;  
116:6, 18  
Surgeon 74:20; 100;  
22; 111:6, 24; 112:2, 5  
74:20; 100:17, 22; 111  
24; 112:2, 5  
surrounding 114:12  
survey 40:14, 17, 14,  
surveys 50:19; 51:6;  
119:13; 50:19; 51:6;  
119:13  
susceptibility 108:10  
sworn 5:4; 80:14; 5:4  
80:14  
Symposium 40:10;  
43:16; 105:19, 20; 40;  
43:16; 105:19, 20

## T

T&N 84:3, 5, 3, 5  
table 47:10; 61:3, 6, 6;  
47:10; 61:3, 6; 64:2  
tables 76:19; 77:4; 76  
77:4  
talk 16:5; 18:1; 21:2, 1  
14; 28:16; 34:19; 36:17  
46:16; 48:22; 50:9; 51;  
60:14; 64:1; 65:9; 90:2  
94:19; 16:5; 18:1; 21:2  
14; 28:16; 34:19; 36:17  
46:16; 48:22; 50:9; 51;  
60:14; 64:1; 65:9; 90:2  
94:19  
talked 9:14; 39:18; 94  
9:14; 39:18; 94:2  
talking 20:7; 29:13;  
34:22; 37:5; 38:20, 21,  
47:13; 54:22; 55:12, 13  
15; 62:5; 106:10; 110:1  
116:19; 20:7; 29:13;  
34:22; 37:5; 38:20, 21,  
47:13; 54:22; 55:12, 13  
15; 62:5; 106:10; 110:1  
116:19  
talks 47:4, 4  
tape 36:1, 1  
taxes 110:15, 15  
technical 76:20, 20  
technically 10:21; 37  
10:21; 37:3  
techniques 44:16, 20  
16, 20  
technological 92:12,  
116:21, 23; 92:12, 17;  
116:21, 23  
Technology 7:5; 32:1  
112:18; 7:5; 32:20; 11;  
tend 65:25; 66:21; 65  
66:21  
tends 102:14, 14  
tentative 100:1, 1

**test** 17:17; 27:17; 32:2;  
109:19; 17:17; 27:17;  
32:2; 109:19  
**testified** 5:5; 9:7, 15, 18,  
20, 23; 10:2, 5, 10, 17;  
18:10; 49:13; 71:14;  
96:14; 5:5; 9:7, 15, 18, 20,  
23; 10:2, 5, 10, 17; 18:10;  
49:13; 71:14; 96:14  
**testify** 6:3; 11:22; 49:5;  
86:8, 14; 6:3; 11:22; 49:5;  
86:8, 14  
**testifying** 110:10, 21, 10,  
21  
**testimony** 11:4; 13:20;  
50:6; 80:14; 119:4; 11:4;  
13:20; 60:6; 80:14; 119:4  
**testing** 59:23; 119:24;  
59:23; 119:24  
**tests** 17:17; 19:7; 27:20;  
17:17; 19:7; 27:20  
**Texas** 5:17; 10:6; 79:11;  
5:17; 10:6; 79:11  
**textbook** 93:23; 94:1, 6,  
10, 13, 14, 22, 23; 95:1;  
93:23; 94:1, 6, 10, 13, 14,  
22, 23; 95:1  
**extbooks** 94:18, 18  
**extile** 97:10, 14; 99:6, 15;  
00:15; 97:10, 14; 99:6,  
5; 100:15  
**hanks** 60:2; 119:7; 60:2;  
19:7  
**Therford** 53:5, 5  
**therefore** 83:14; 94:5;  
06:24; 115:19; 83:14;  
94:5; 106:24; 115:19  
**hereto** 123:4, 4  
**hereunder** 5:19, 19  
**thermal** 55:20; 79:2;  
01:3; 55:20; 79:2; 101:3  
**Thetford** 53:9, 12; 54:7;  
53:9, 12; 54:7  
**third** 69:21, 21  
**though** 106:8, 8  
**thought** 22:22; 63:13;  
64:8; 86:8, 15; 117:14;  
22:22; 63:13; 64:8; 86:8,  
15; 117:14  
**three** 7:11; 16:15; 47:6;  
7:11; 16:15; 47:6  
**threshold** 100:1, 3;  
109:8; 100:1, 3; 109:8  
**throughout** 103:23;  
104:20; 103:23; 104:20  
**throw** 56:22, 22  
**thus** 65:16, 16  
**ile** 86:19; 113:11; 86:19;  
113:11  
**iles** 87:4, 7; 89:16; 87:4,  
89:16  
**imes** 9:18; 11:16; 96:15;  
07:12; 9:18; 11:16;  
6:15; 107:12  
**tle** 107:4, 4  
**LV** 79:20, 20

**tobacco** 112:2, 11, 2, 11  
**today** 5:9; 14:7; 28:19;  
70:15; 78:13; 85:22; 87:1;  
108:6; 116:18; 5:9; 14:7;  
28:19; 70:15; 78:13;  
85:22; 87:1; 108:6; 116:18  
**together** 9:12; 15:16;  
30:13; 47:23; 52:20;  
60:24; 76:18; 77:2; 9:12;  
15:16; 30:13; 47:23;  
52:20; 60:24; 76:18; 77:2  
**told** 77:2, 2  
**tomorrow** 13:8, 8  
**took** 16:24; 44:12; 75:10;  
16:24; 44:12; 75:10  
**top** 31:24, 24  
**total** 44:3, 10; 65:14;  
100:9; 110:9; 44:3, 10;  
65:14; 100:9; 110:9  
**totally** 46:12, 12  
**touched** 49:5, 5  
**tour** 16:25, 25  
**toward** 79:7, 7  
**Towards** 58:21, 21  
**trade** 41:8, 8  
**train** 22:22, 22  
**training** 94:23, 23  
**transcript** 123:2, 7, 2, 7  
**Transfer** 32:20; 112:18;  
32:20; 112:18  
**transient** 65:22; 66:1, 3;  
65:22; 66:1, 3  
**treatises** 13:18, 25, 18,  
25  
**tremolite** 26:8; 27:18, 22;  
53:8, 23; 54:5, 16, 19;  
26:8; 27:18, 22; 53:8, 23;  
54:5, 16, 19  
**trends** 62:23, 23  
**trial** 5:16, 22; 6:3; 9:15,  
18; 10:2, 2, 4, 6, 15, 16;  
11:3; 13:13; 20:24; 49:7;  
82:15; 83:13; 96:15;  
115:16; 5:16, 22; 6:3; 9:15,  
18; 10:2, 2, 4, 6, 15, 16;  
11:3; 13:13; 20:24; 49:7;  
82:15; 83:13; 96:15;  
115:16  
**trials** 9:20, 24, 20, 24  
**tried** 29:1; 34:16; 38:15;  
29:1; 34:16; 38:15  
**trouble** 62:3, 3  
**troubles** 38:15, 15  
**true** 53:10; 59:18; 61:14,  
24; 69:1; 80:5; 83:16; 90:1;  
92:20; 102:10; 107:1, 18;  
108:9, 19, 21; 117:23;  
123:6; 53:10; 59:18;  
61:14, 24; 69:1; 80:5;  
83:16; 90:1; 92:20;  
102:10; 107:1, 18; 108:9,  
19, 21; 117:23; 123:6  
**truly** 109:8, 8  
**try** 29:9; 30:13; 52:24;  
105:16; 29:9; 30:13;  
52:24; 105:16

**trying** 17:11; 23:12; 27:6;  
30:21; 43:3; 49:4; 69:19;  
104:18; 105:2, 15; 17:11;  
23:12; 27:6; 30:21; 43:3;  
49:4; 69:19; 104:18;  
105:2, 15  
**turn** 61:3, 14; 63:9; 61:3,  
14; 63:9  
**Turner** 81:20; 84:5;  
81:20; 84:5  
**turning** 36:18; 37:5;  
64:15; 36:18; 37:5; 64:15  
**turnover** 42:16, 16  
**two** 8:4, 13, 18; 17:23;  
20:17, 18; 33:6; 43:9; 57:6;  
61:5; 62:11; 8:4, 13, 18;  
17:23; 20:17, 18; 33:6;  
43:9; 57:6; 61:5; 62:11  
**type** 23:13; 25:2, 15, 16;  
26:5; 44:12; 73:13; 75:7;  
19:76:4; 101:16; 108:24;  
109:16, 23; 112:14; 113:4;  
23:13; 25:2, 15, 16; 26:5;  
44:12; 73:13; 75:7, 19;  
76:4; 101:16; 108:24;  
109:16, 23; 112:14; 113:4  
**types** 24:21; 25:18; 33:6;  
17:44:20; 45:8; 91:17;  
92:23, 24; 113:17; 24:21;  
25:18; 33:6; 17:44:20;  
45:8; 91:17; 92:23, 24;  
113:17  
**typewriting** 123:5, 5

## U

**U.K** 33:8, 8  
**U.S** 74:9, 13, 21; 75:4, 13;  
76:3; 78:7, 17; 82:22;  
84:17; 85:4; 93:11, 18;  
95:19; 96:7; 98:15; 99:5;  
13; 100:16, 17, 20, 23;  
101:9, 10; 111:6; 112:2,  
10; 74:9, 13, 21; 75:4, 13;  
76:3; 78:7, 17; 82:22;  
84:17; 85:4; 93:11, 18;  
95:19; 96:7; 98:15; 99:5,  
13; 100:16, 17, 20, 23;  
101:9, 10; 111:6; 112:2, 10  
**Um-hum** 58:3, 3  
**un-peer-reviewed** 20:2,  
2  
**under** 39:12; 41:2; 49:18;  
75:10, 22; 79:10; 87:19;  
88:8, 14, 24; 97:4; 100:16,  
18; 112:23; 123:5; 39:12;  
41:2; 49:18; 75:10, 22;  
79:10; 87:19; 88:8, 14, 24;  
97:4; 100:16, 18; 112:23;  
123:5  
**underground** 26:23, 23  
**United** 28:21; 32:24;  
40:6; 74:25; 75:18; 98:21;  
101:4; 111:3; 28:21;  
32:24; 40:6; 74:25; 75:18;  
98:21; 101:4; 111:3  
**unless** 50:1; 59:24;

60:13; 65:6; 85:1, 5, 11;  
102:25; 50:1; 59:24;  
60:13; 65:6; 85:1, 5, 11;  
102:25  
**unpublished** 20:1, 1  
**up** 9:18; 33:7; 39:5; 66:13;  
77:4; 92:1; 93:19; 96:8;  
104:9, 19; 111:15; 113:1;  
115:14; 116:17; 118:24;  
9:18; 33:7; 39:5; 66:13;  
77:4; 92:1; 93:19; 96:8;  
104:9, 19; 111:15; 113:1;  
115:14; 116:17; 118:24  
**update** 40:11, 11  
**upheld** 29:4, 4  
**upon** 12:2; 13:20; 18:4;  
20:21; 21:24; 22:17; 24:7;  
27:17; 32:8; 46:10; 57:18;  
68:12; 77:23; 92:12, 16,  
17; 103:16; 117:2, 7;  
123:7; 12:2; 13:20; 18:4;  
20:21; 21:24; 22:17; 24:7;  
27:17; 32:8; 46:10; 57:18;  
68:12; 77:23; 92:12, 16,  
17; 103:16; 117:2, 7; 123:7  
**urban** 22:13; 23:20;  
22:13; 23:20  
**urbanization** 22:17, 17  
**use** 29:1, 7, 9, 10, 18;  
33:13, 14; 43:24; 44:16;  
46:10; 57:1; 72:14; 93:19;  
94:3; 95:12; 96:1; 115:15;  
29:1, 7, 9, 10, 18; 33:13,  
14; 43:24; 44:16; 46:10;  
57:1; 72:14; 93:19; 94:3;  
95:12; 96:1; 115:15  
**used** 5:18; 11:23; 24:21,  
22; 25:3, 4, 12; 26:14, 24;  
27:3, 10; 28:20; 33:9; 44:6;  
46:24; 47:2; 56:21; 63:18,  
23; 76:5; 79:4; 88:2; 90:12;  
93:12; 94:23; 95:13, 16,  
21; 119:25; 5:18; 11:23;  
24:21, 22; 25:3, 4, 12;  
26:14, 24; 27:3, 10; 28:20;  
33:9; 44:6; 46:24; 47:2;  
56:21; 63:18, 23; 76:5;  
79:4; 88:2; 90:12; 93:12;  
94:23; 95:13, 16, 21;  
119:25  
**user** 37:4; 118:13, 20;  
37:4; 118:13, 20  
**users** 34:5, 10; 36:8, 24;  
38:22; 57:24; 97:16;  
98:11; 116:3; 118:11;  
34:5, 10; 36:8, 24; 38:22;  
57:24; 97:16; 98:11;  
116:3; 118:11  
**uses** 33:9, 9  
**using** 17:19; 20:3; 21:22;  
33:19; 44:3; 45:19; 53:21;  
89:16; 108:13; 17:19;  
20:3; 21:22; 33:19; 44:3;  
45:19; 53:21; 89:16;  
108:13  
**usually** 11:22; 57:1;  
11:22; 57:1

## V

**vague** 36:25, 25  
**value** 100:2, 3, 2, 3  
**variety** 75:5, 5  
**various** 20:13; 27:9;  
33:17; 46:22; 47:21;  
113:21; 20:13; 27:9;  
33:17; 46:22; 47:21;  
113:21  
**ventilation** 109:4, 12, 4,  
12  
**verify** 21:21; 22:1; 21:21;  
22:1  
**version** 7:8, 8  
**versus** 24:6, 6  
**vicinity** 72:20; 73:1;  
72:20; 73:1  
**videotapes** 15:23, 23  
**view** 53:23; 56:7; 57:9,  
12; 53:23; 56:7; 57:9, 12  
**vintage** 6:19, 19  
**visible** 108:22, 22  
**visited** 84:19, 24; 85:3, 8,  
17; 86:1, 4; 84:19, 24;  
85:3, 8, 17; 86:1, 4  
**Volume** 8:17; 52:8; 68:4,  
13; 8:17; 52:8; 68:4, 13  
**volumes** 44:9, 9

## W

**Wagner** 23:7; 41:14;  
42:5, 13; 77:10, 15, 17;  
23:7; 41:14; 42:5, 13;  
77:10, 15, 17  
**Wagner's** 41:19, 24, 19,  
24  
**waive** 5:24; 6:1, 4, 6;  
5:24; 6:1, 4, 6  
**wallboard** 84:20, 20  
**Walsh-Healey** 75:23, 25,  
23, 25  
**warning** 76:4; 78:25;  
87:25; 112:14, 24; 113:3;  
76:4; 78:25; 87:25;  
112:14, 24; 113:3  
**warnings** 112:10;  
113:17; 112:10; 113:17  
**Washington** 8:21, 21  
**water** 60:4, 13, 4, 13  
**way** 9:13; 21:21; 27:25;  
38:3; 39:12; 45:22; 64:20;  
65:23; 100:19; 104:9;  
105:8; 115:14; 9:13;  
21:21; 27:25; 38:3; 39:12;  
45:22; 64:20; 65:23;  
100:19; 104:9; 105:8;  
115:14  
**wear** 89:6, 6  
**week** 5:22; 10:5; 48:23;  
67:22; 5:22; 10:5; 48:23;  
67:22  
**weight** 44:10, 10

**weighted** 31:4, 4  
**welders** 73:11, 11  
**weren't** 6:24; 24:8; 47:16;  
80:15; 89:3; 91:18; 92:7;  
6:24; 24:8; 47:16; 80:15;  
89:3; 91:18; 92:7  
**Westinghouse** 70:3, 3  
**what's** 45:1, 6; 59:17;  
71:5; 45:1, 6; 59:17; 71:5  
**wherever** 79:4, 4  
**wick** 36:2, 2  
**wife** 52:20, 20  
**willing** 80:3, 3  
**wind** 109:4, 4  
**within** 53:11; 63:21;  
53:11; 63:21  
**without** 23:21; 26:4;  
49:10; 60:25; 23:21; 26:4;  
49:10; 60:25  
**witness** 9:21; 10:1, 3;  
11:12; 14:4; 18:12; 31:11;  
35:5, 9; 37:2; 38:7; 58:23;  
63:8; 65:2; 66:8; 69:17;  
71:1, 18; 76:9; 78:23;  
80:18; 90:8; 91:23; 93:2;  
102:9; 114:2; 116:4;  
117:20; 118:15; 9:21;  
10:1, 3; 11:12; 14:4; 18:12;  
31:11; 35:5, 9; 37:2; 38:7;  
58:23; 63:8; 65:2; 66:8;  
69:17; 71:1, 18; 76:9;  
78:23; 80:18; 90:8; 91:23;  
93:2; 102:9; 114:2; 116:4;  
117:20; 118:15  
**Woitowitz** 58:9; 59:11;  
58:9; 59:11  
**word** 95:13; 112:8; 95:13;  
112:8  
**words** 90:20, 20  
**work** 8:15; 39:24; 41:24;  
44:14; 56:2; 59:16; 65:21;  
69:1, 8; 71:8; 72:24; 73:13;  
77:15; 80:4, 4; 110:10;  
8:15; 39:24; 41:24; 44:14;  
56:2; 59:16; 65:21; 69:1, 8;  
71:8; 72:24; 73:13; 77:15;  
80:4, 4; 110:10  
**worked** 16:12, 13; 20:24;  
21:11; 50:18; 63:22;  
64:17, 21; 69:12; 70:23;  
71:22; 109:19; 112:21;  
119:17; 16:12, 13; 20:24;  
21:11; 50:18; 63:22;  
64:17, 21; 69:12; 70:23;  
71:22; 109:19; 112:21;  
119:17  
**worker** 39:20; 77:1; 79:8;  
104:22; 107:1; 39:20;  
77:1; 79:8; 104:22; 107:1  
**workers** 16:14; 37:12;  
14, 19; 40:3; 24; 41:21;  
57:24; 60:16; 65:21, 22;  
66:1, 3; 72:11, 24; 77:25;  
80:11, 16, 23; 89:16, 23;  
90:4; 95:10; 97:10, 14;  
98:11; 99:6, 15; 100:15;  
102:18, 25; 104:8, 11;  
105:10, 25; 106:15, 23;  
107:13, 16; 16:14; 37:12,  
14, 19; 40:3; 24; 41:21;  
57:24; 60:16; 65:21, 22;  
66:1, 3; 72:11, 24; 77:25;  
80:11, 16, 23; 89:16, 23;  
90:4; 95:10; 97:10, 14;  
98:11; 99:6, 15; 100:15;  
102:18, 25; 104:8, 11;  
105:10, 25; 106:15, 23;  
107:13, 16  
**working** 17:4; 18:18;  
19:22; 33:20; 72:10, 25;  
73:1; 89:23; 97:14; 99:7;  
101:3; 117:16; 118:16;  
119:14; 17:4; 18:18;  
19:22; 33:20; 72:10, 25;  
73:1; 89:23; 97:14; 99:7;  
101:3; 117:16; 118:16;  
119:14  
**workplace** 45:16; 76:5;  
78:4, 10, 20; 79:3; 80:11,  
23; 88:2; 45:16; 76:5; 78:4,  
10, 20; 79:3; 80:11, 23;  
88:2  
**workplaces** 87:25, 25  
**world** 26:22; 81:3; 83:1;  
85:9, 14; 86:10; 111:12;  
26:22; 81:3; 83:1; 85:9, 14;  
86:10; 111:12  
**worried** 17:9, 9  
**Worth** 51:6, 6  
**writing** 112:25, 25  
**writings** 15:24, 24  
**written** 13:19; 14:14;  
13:19; 14:14  
**wrong** 49:4; 52:25; 49:4;  
52:25  
**wrote** 92:9; 105:12; 92:9;  
105:12

---

**X**

---

**X-rays** 9:3, 3

---

**Y**

---

**year** 9:14, 17, 17, 20, 23;  
64:17, 21, 24; 65:3, 5, 12,  
22; 88:11, 21; 107:7; 9:14,  
17, 17, 20, 23; 64:17, 21,  
24; 65:3, 5, 12, 22; 88:11,  
21; 107:7  
**years** 10:9; 16:17; 24:2;  
69:1; 103:4, 9; 10:9; 16:17;  
24:2; 69:1; 103:4, 9  
**yesterday** 31:15, 15  
**York** 40:9; 94:14; 95:6;  
106:14; 40:9; 94:14; 95:6;  
106:14

---

**Z**

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**zero** 95:11, 11

## Lawyer's Notes

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IN THE COUNTY COURT  
AT LAW NO. 3  
DALLAS COUNTY, TEXAS

KENNETH DALE RAPER and )  
MARGARITE ELLEN RAPER, )  
Plaintiffs, )  
vs. )  
OWENS-CORNING FIBERGLASS )  
CORPORATION, et al., )  
Defendants. )

CAUSE NO. 98-8060-C

DEPOSITION OF

RICHARD A. LEMEN, Ph.D.

March 13, 1999

9:03 a.m.

4000 SunTrust Plaza  
303 Peachtree Street, N.E.  
Atlanta, Georgia

Diane Bachus, B-2089

BROWN REPORTING, INC.  
1740 PEACHTREE STREET, N.W.  
ATLANTA, GEORGIA 30309  
(404) 876-8979

APPEARANCES OF COUNSEL

On behalf of the Plaintiff:

PATRICK HAINES, Esq.  
Baron & Budd  
The Centrum, Suite 1100  
3102 Oak Lawn Avenue  
Dallas, Texas 75219-4281

On behalf of the Defendant:

Allied Signal, as Successor in Interest to the  
Bendix Corporation:

ERIC K. FALK, Esq.  
Davies, McFarland & Carroll, P.C.  
The Tenth Floor, One Gateway Center  
Pittsburgh, Pennsylvania 15222-1416

On behalf of the Defendant

Daimler-Chrysler Corporation:

OLLIE M. HARTON, Esq.  
Hawkins & Parnell  
4000 SunTrust Plaza  
303 Peachtree Street, N.E.  
Atlanta, Georgia 30303-3243

On behalf of the Defendant:

Pittsburgh Corning:

IVAN A. GUSTAFSON  
Blasingame, Burch, Garrard,  
Bryant & Ashley, P.C.  
440 College Avenue North  
P.O. Box 832  
Athens, Georgia 30603

APPEARANCES OF COUNSEL, CONT.

On behalf of the Defendant  
Kelly Moore:

KEVIN J. BAHR, Esq.  
Hawkins & Parnell  
4000 SunTrust Plaza  
303 Peachtree Street, N.E.  
Atlanta, Georgia 30303-3243

On behalf of the Defendant  
GEORGIA PACIFIC:

JONATHAN W. JOHNSON, Esq.  
Nelson, Mullins, Riley & Scarborough, L.L.P.  
First Union Plaza, Suite 1400  
999 Peachtree Street, N.E.  
Atlanta, Georgia 30309

On behalf of the Defendant  
NARCO:

C. DENNIS BARROW, JR.  
Vinson & Elkins, L.L.P.  
2300 First City Tower, 1001 Fannin  
Houston, Texas 77002-6760

On behalf of the Defendant  
Pneumo Abex Corporation:

FRANCESCA M. SIENI, Esq.  
Smith, Abbot, L.L.P.  
100 Maiden Lane  
New York, New York 10038

APPEARANCES OF COUNSEL, CONT.

On behalf of the Defendant

Armstrong World Industries, Inc.; Asbestos  
Claims Management Corporation, f/k/a National  
Gypsum Company; U.S. Gypsum Company; GAF  
Corporation; Dana Corporation; Quigley  
Company, Inc.; Flexitallic, Inc.;  
the Synkoloid Company:

GARY ELLISTON, Esq.  
DeHay & Elliston, L.L.P.  
NationsBank Plaza, Suite 3500  
901 Main Street  
Dallas, Texas 75202

- - -

1 (Defendant's Exhibit 1 was marked for  
2 identification.)

3 RICHARD A. LEMEN, Ph.D.,  
4 having been first duly sworn, was examined and  
5 testified as follows:

6 CROSS-EXAMINATION

7 BY MR. HARTON:

8 Q. Dr. Lemen, I'm Ollie Harton. I'm going  
9 to ask you some questions today. But before we get  
10 farther, I want to say a few things.

11 MR. HARTON: This is a deposition  
12 being taken pursuant to agreement of  
13 counsel. All objections except as to the  
14 form of the question and responsiveness of  
15 the answer will be reserved until the time  
16 of trial. This deposition is being taken  
17 pursuant to the Texas Rules of Civil  
18 Procedure and can be used for all purposes  
19 permitted thereunder.

20 Dr. Lemen, I don't know what you want  
21 to do about reading and signing, but the  
22 trial starts sometime next week.

23 MR. HAINES: I guess we'll go ahead  
24 and waive signature.

25 MR. HARTON: If that's all right,

1 waive signature. If you want to read it,  
2 it's going to make things difficult.  
3 Potentially you may testify at trial. But  
4 if you want to waive --

5 MR. HAINES: Given the time frame, it  
6 will be better to waive.

7 Q. (By Mr. Harton) What I'd like to do,  
8 first of all, is show you what is one of the  
9 amended notices of deposition, which is Exhibit 1,  
10 and ask you if you've seen that before, sir.

11 A. No.

12 Q. If we could, let me run through what I  
13 call the attachments at the back. And I know  
14 you've brought a number of documents with you, and  
15 we'll see what they are.

16 But you brought, first of all, I think, a  
17 CV. You have one. Is this a -- obviously, this  
18 is a CV of yours. Do you know when this -- oh,  
19 it's December '98? Is that the right vintage?

20 A. Right.

21 Q. This is newer than the ones I've got.

22 A. Probably.

23 Q. What additions do you have on this that  
24 weren't on the earlier one?

25 A. Possibly some publications and -- very

1 few additions. It's just that when my computer  
2 prints it out, it prints out a new date on it. So  
3 it doesn't necessarily mean that it's changed, but  
4 I think that I probably added a chairperson of  
5 Science & Technology Advisory Committee and the  
6 Carpenters Health & Safety Fund, and I think I may  
7 have added a couple of publications.

8 I think -- I don't know which version you  
9 have.

10 Q. Mine's August.

11 A. But I think probably the last three or  
12 four publications. But that's the most current one  
13 I have.

14 Q. All right. Can we mark this, take this  
15 as an exhibit?

16 A. Yes, you can have that.

17 Q. Might as well mark that while we're at it  
18 and we can look through there.

19 A. Is there anybody by phone?

20 Q. No, not that I'm aware of.

21 (Defendant's Exhibit 2 was marked for  
22 identification.)

23 Q. (By Mr. Harton) Second, the entire  
24 medical file on Kenneth Dale Raper.

25 Have you been provided any medical

1 information on Mr. Raper?

2 A. I'll give you everything that I've been  
3 provided on Mr. Raper is in this packet right here.  
4 And there is -- there are two things on the  
5 medical.

6 Q. Okay. If it's all right, collectively  
7 we'll mark this as Exhibit 3.

8 A. Yes.

9 (Defendant's Exhibit 3 was marked for  
10 identification.)

11 Q. (By Mr. Harton) It's a cover letter to  
12 you, obviously. So everyone knows, the report by  
13 Dr. Robb -- well, actually, two, one dated  
14 11/24/98, another 2/18/98. What I will call the  
15 work history sheets that Baron & Budd prepares on a  
16 regular basis for their clients. And this is just  
17 job sites, products information. And Volume --

18 A. The rest are all Mr. Raper's two  
19 depositions and co-worker depositions.

20 Q. Those are I and II of Raper. Co-worker  
21 depositions of Mr. Ivie, Washington and Bridges and  
22 Lewis.

23 Have you been provided any other  
24 information on Mr. Raper?

25 A. No, that's it.

1 Q. No other medical records?

2 A. No, sir.

3 Q. No chest X-rays?

4 A. No.

5 Q. Do you have -- some people do, some  
6 people don't. We've requested -- if you have a  
7 list of the cases where you've testified in since  
8 1989, do you have any summary of --

9 A. I didn't bring anything, no, sir.

10 Q. Do you have anything like that that would  
11 just simply indicate that either the deposition --

12 A. I have put together a complete list.

13 Q. How about this way. Last time I know I  
14 talked -- I think it was in August of last year, I  
15 think. Where have you testified in trial since  
16 August of 1998?

17 A. Well, last year, calendar year, I didn't  
18 look it up, I've testified five times in trial.  
19 And I've given, I think, 16 depositions in the last  
20 year. Most of the trials were -- that I testified  
21 in were fact witness as well as state-of-the-art,  
22 principally dealing -- a lot of them dealing with  
23 Pittsburgh Corning. And this year I've testified  
24 probably in about six trials since January, or  
25 somewhere in that neighborhood, both as a

1 state-of-the-art and fact witness. The latest  
2 trial that I testified in was the paper mill trial  
3 in Louisiana as a rebuttal witness, not as a -- I  
4 was brought in as rebuttal for that trial.

5 And, also, last week I testified in a  
6 Pittsburgh Corning trial in Austin, Texas. And do  
7 you want me to keep going?

8 Q. No. Let me ask you some questions that  
9 might help narrow at least my focus. For the years  
10 '98 and '99, have you testified in a case where you  
11 were asked opinions regarding brakes or brake  
12 linings?

13 A. The paper mill case.

14 Q. Other than the paper mill case, is that  
15 the only trial in '98, '99?

16 A. I think that's the only trial that I  
17 testified in that dealt with brakes.

18 MR. HAINES: Just to be clear, it was  
19 not brakes specifically but the Borg-Warner  
20 case, which was the clutch facing case. It  
21 was technically not a brake case but pretty  
22 close. And that was in early '98.

23 Q. (By Mr. Harton) Okay. Other depositions  
24 that you've given in brake lining cases in '98 or  
25 '99?

1           A.     I think those pretty much cover it, to  
2 the best of my knowledge.

3           Q.     Did you give both depositions and trial  
4 testimony --

5           A.     Yes.

6           Q.     -- in both --

7           A.     Yes.

8           Q.     -- of the Borg-Warner case and in the  
9 Boglusa case?

10           MR. HAINES: I don't think you were  
11 deposed in Borg-Warner.

12           THE WITNESS: I don't think I was  
13 either, but I spent about six days in this  
14 room in the paper mill, as you remember.

15           Q.     (By Mr. Harton) Luckily, I don't.

16           A.     You popped your head in a few times, I  
17 think.

18           Q.     Do you have any -- going down the list of  
19 things to produce, any charts, exhibits or  
20 photographs that you've considered in connection  
21 with this case? That would be No. 7.

22           A.     Well, usually when I testify I bring  
23 along this book that I've used in most every case  
24 for state-of-the-art, which is -- does have  
25 exhibits in it. It has my time line. I brought an

1 extra copy of the time line, which is the principal  
2 thing that I rely upon in state-of-the-art. But  
3 you can have those copies.

4 MR. HARTON: Let me go off the record  
5 for a minute.

6 (Discussion off the record.)

7 Q. (By Mr. Harton) What I'm going to mark  
8 as the next exhibit, as opposed to your large  
9 notebook that you bring -- and I understand that  
10 should we want a copy of the entire notebook you  
11 can make that for us?

12 A. Yes.

13 Q. But as the next exhibit or as a portion  
14 of it I'm just going to put your time line in, if  
15 that's all right.

16 A. And that you can keep.

17 Q. No. 8, any other objects or evidence that  
18 you consider --

19 A. I pulled out of my files specific  
20 references dealing with brakes, and that is not  
21 included in this notebook.

22 Q. Okay.

23 A. There's a MedLine search in there,  
24 there's a NIOSH search and a selected number of  
25 articles that I pulled.

1 Q. Are these articles included in your time  
2 line, do you know?

3 A. Some are and some aren't.

4 Q. We should mark this and get copies of  
5 that.

6 A. Okay. If I could, I'd like to make the  
7 copies of that. I mean, I can do that real  
8 quickly, but I can have them to you tomorrow,  
9 probably. But you can mark it. I mean --

10 Q. That's fine. Other than these articles  
11 and what you've produced as your -- in response to  
12 No. 7, your large notebook, I will call it, that  
13 you're bringing with you to trial, is there any  
14 other information that you have considered in  
15 connection with this case, the Raper case?

16 A. No.

17 Q. No. 9 is asking for standards,  
18 regulations, books, treatises or other supporting  
19 written or computerized data that you've relied  
20 upon in connection with the testimony that you're  
21 going to give in this case.

22 MR. HAINES: Let me just interpose an  
23 objection as to the breadth of that  
24 request. Obviously, Dr. Lemen has lots of  
25 learning treatises, which he can tell you

1 about. If you don't have a copy, I'm sure  
2 we can find a copy if he has one. But I do  
3 object to the overbreadth of the request.

4 THE WITNESS: I would say my  
5 knowledge on asbestos comes from a lot more  
6 material than what I've produced here  
7 today. And so to answer that question I  
8 would say there are many books I've read  
9 and other things. But to bring those would  
10 necessitate bringing my entire library,  
11 so --

12 Q. (By Mr. Harton) No. 10, all notes,  
13 documents, records, photographs, letters or other  
14 written material of any kind that's been provided  
15 to you by anyone with regard to this case. Is  
16 there anything else?

17 A. No.

18 Q. Billing records.

19 A. I haven't made any billings on this case  
20 to this point in time.

21 Q. How much time have you spent on this case  
22 so far?

23 A. Well, I've read through the materials  
24 that I was given. I would say that I've possibly  
25 spent six hours at maximum, something like that.

1 MR. HARTON: Let me get this marked,  
2 if I can, and then give it back to you.

3 Can you mark that?

4 (Defendant's Exhibits 4 and 5 marked  
5 for identification.)

6 Q. (By Mr. Harton) What we've marked as  
7 Exhibit 9 -- or 4, I'm sorry, these are the  
8 articles. Is this something you prepared for the  
9 Raper case or was this prepared in connection with  
10 other litigation?

11 A. I pulled the material out of this --  
12 that's in that notebook for the Raper case. And I  
13 actually had prepared the literature searches  
14 earlier for another case. So you'll see the date  
15 on those are several months old. But I put the  
16 notebook together specifically for this case.

17 Q. What are your charges for your time?

18 A. I charge for a deposition minimum daily  
19 fee of \$1,500, and then if it goes over -- that's  
20 based on \$300 an hour, and 250 for preparation  
21 time.

22 Q. Have you -- No. 12, the last one, this is  
23 dealing with presentations, videotapes, recordings  
24 or writings you may have made in connection with  
25 seminars, speeches or presentations given to

1 lawyers or groups of lawyers.

2 Do you have anything that's responsive to  
3 No. 12?

4 A. No.

5 Q. That being done, let's talk about --  
6 first of all, I represent Chrysler Corporation.  
7 Have you been provided any documents with respect  
8 to Chrysler Corporation?

9 A. No.

10 Q. Have you ever been to a Chrysler  
11 Corporation facility where they're making cars?

12 A. During the time I worked for NIOSH, I had  
13 worked on several occasions with the Joint Labor  
14 Management Committees of the auto workers from the  
15 three major car companies. And in the process of  
16 that I've been into a Chrysler plant, but it's been  
17 15, 20 years ago at least. And I don't -- I think  
18 it was a Chrysler plant, but it was in Detroit.

19 Q. An automobile plant?

20 A. Yeah, right.

21 Q. The time you went into this automobile  
22 plant, were you at all focused on air sampling for  
23 asbestos?

24 A. Mainly it was an orientation that we took  
25 as a part of the tour of the plant. And it wasn't

1 really as a compliance activity or anything. The  
2 only time that I've ever been in an auto plant that  
3 really had anything to do with a health hazard  
4 evaluation was when I was working on the models,  
5 model makers, and there was some concern of the  
6 models for the cars and disease that was occurring  
7 among the model makers. And that was back in the  
8 late '70s.

9 Q. What was the disease they were worried  
10 about with these model plants?

11 A. I'm trying to remember right now. It  
12 was -- I think it was a concern about solvent  
13 exposure.

14 Q. It wasn't asbestos or asbestos exposure?

15 A. No.

16 Q. Have you been given any -- what I call  
17 test results on tests of brake linings that would  
18 attempt to quantify the amount of asbestos that may  
19 be released by either installing or using brake  
20 liners?

21 A. If you look at the notebook that he has,  
22 Exhibit 4, the Lorimer paper -- I think it may be  
23 the number one or two paper in there, and the Rohl,  
24 R-O-H-L -- is that how you pronounce it? Rohl.  
25 And they do give some figures. And then there are

1 others in there that do talk about amount of fibers  
2 released during the repair. But that's the  
3 information. It's nothing that I've collected,  
4 it's material that I've relied upon.

5 Q. The information that you have been given  
6 would have been, then, in effect, published  
7 peer-reviewed reports?

8 A. Yes.

9 MR. HAINES: I'm not sure he  
10 testified that was given to him. I think  
11 that was --

12 THE WITNESS: No, I pulled this. No  
13 one gave that to me. I pulled that myself.

14 Q. (By Mr. Harton) Let me change the  
15 question. The information that you've -- I'll  
16 start over. The information that you have  
17 quantifying the amount of asbestos released by  
18 working with or installing brake linings has come  
19 from the published peer review literature?

20 A. And also NIOSH reports, which are like  
21 the CIB that you're looking at right now, which is  
22 not a published peer review but a NIOSH document  
23 that --

24 Q. Let me run through these. One of the  
25 articles in here is the Current Intelligence.

1 Bulletin 5 of August 1975?

2 A. Yes, sir.

3 Q. It would have some attempt to quantify  
4 the amount of asbestos fibers released by or around  
5 garage mechanics.

6 This CIB No. 5, August 1975, deals with  
7 tests that were done on brake drums, dust from  
8 brake drums. Is that right?

9 A. That's correct.

10 Q. The Rohl article I think you referred to  
11 is asbestos exposure during brake lining  
12 maintenance and repair?

13 A. Yes.

14 Q. That's a 1976 article?

15 A. Right.

16 Q. The Lorimer-Rohl article, I think also a  
17 1976 article, --

18 A. Yes, that's correct. I think from there  
19 on back there are literature reviews.

20 Q. So all of the peer-reviewed literature  
21 that you could find quantifying the amount of  
22 asbestos released by working with brake -- or I  
23 should say friction products is all after 1965,  
24 right?

25 A. I believe that's correct.

1 Q. Have you been given any unpublished,  
2 un-peer-reviewed literature attempting to quantify  
3 the amount of asbestos fibers released by using  
4 brake linings?

5 A. No, none other than what I've brought  
6 with me.

7 Q. I'm talking about being given as opposed  
8 to what you found. That question I did mean to  
9 say --

10 A. No, sir.

11 Q. All right. You've -- I'm not sure which  
12 exhibit this is.

13 What is -- Exhibit 5 includes the various  
14 depositions of Mr. Raper, his co-workers and  
15 others?

16 A. Exhibit 5 includes everything that I was  
17 given by plaintiff's attorneys, two medical reports  
18 by Dr. Robb, the rest are depositions of -- two of  
19 Mr. Raper, and then the rest are co-worker  
20 depositions.

21 Q. Based upon all the information you've  
22 received in the Raper case, do you have any  
23 information to -- that would support an opinion  
24 that you may express at trial that Mr. Raper worked  
25 with automobile brake linings after 1965?

1           A.     I don't believe I have anything -- I'm  
2 really not being asked to talk about his exposure,  
3 but I don't think I have anything.

4           MR. HAINES: Right. No, Dr. Lemen is  
5 not being presented for that particular  
6 opinion.

7           Q.     (By Mr. Harton) So from what you have  
8 done, your review of all of the depositions,  
9 Mr. Raper's deposition and his co-workers'  
10 depositions, focusing on those only, you have no  
11 information to say that he worked with automobile  
12 brake linings after 1965, right?

13          A.     No.

14          Q.     Okay. Let's talk about -- let's talk  
15 about levels of exposure. Based on what you've  
16 seen in Exhibit 5, you would agree that Mr. -- or  
17 is it your opinion that Mr. Raper was diagnosed  
18 with mesothelioma?

19          A.     That's correct.

20          Q.     Have you done anything to attempt to  
21 independently verify in any way this diagnosis, or  
22 are you just using these reports as the basis for  
23 your opinion?

24          A.     I'm relying upon these reports. First of  
25 all, I'm not a medical doctor, so I'm not being

1 brought in to verify a diagnosis or to substantiate  
2 that. I'm making the presumption that the  
3 diagnosis is correct.

4 Q. You would agree that as a Ph.D.  
5 epidemiologist, that asbestos-related diseases are  
6 dose-related?

7 A. Yes, I do.

8 Q. And, for instance, mesothelioma, there  
9 has to be some dose before the disease could be  
10 related to asbestos exposure?

11 A. Yes, there does.

12 Q. You would agree that in the ambient air  
13 in urban environments, be it Atlanta, Dallas or, I  
14 think, any city in this country, there would be  
15 some asbestos in the air?

16 A. There's generally a background level of  
17 asbestos, depending upon the urbanization of the  
18 city. And probably in Atlanta it's getting a lot  
19 bigger.

20 Q. Yes, it's getting larger in Atlanta as  
21 the city grows.

22 Gosh, lose my train of thought.

23 Do you know of any attempt to quantify or  
24 prove that ambient air concentrations of asbestos  
25 can cause any asbestos-related disease?

1           A.     Well, there have been community studies  
2     that have been done concerning asbestos and  
3     disease. Been studies around the Canadian asbestos  
4     mines and mills. The latest, I guess, is a paper  
5     that was in New England Journal of Medicine,  
6     looking at cancer rates in proximity. The original  
7     paper that Chris Wagner did about mesothelioma in  
8     South Africa actually looked at community  
9     exposures. So there have been some studies that  
10    did that. Newhouse in England looked at some  
11    community studies done around asbestos factors.

12          Q.     Poor questions. I'm trying to exclude --

13          A.     Those type of things?

14          Q.     Yes. And, really, so you know, I know  
15    those things are out there. I don't deny that.  
16    But, for instance, for someone who would live in --  
17    be it Atlanta or Dallas or in some city where  
18    they're not next to a factory, they're not next to  
19    a mine where asbestos ore is being taken out of the  
20    earth, do you know of any studies in urban  
21    environments, let's say, without those other  
22    potential contaminants, that have attempted to  
23    prove that ambient air concentrations can cause  
24    asbestos-related diseases?

25          A.     I don't know of any that have been .

1 attempted to prove it. The National Cancer  
2 Institute, about 20 years ago, did put out their  
3 cancer maps, if you recall those, and they  
4 published those. Those were not an attempt at  
5 causation but were an attempt to show where there  
6 were high rates of lung cancer versus low rates of  
7 lung cancer based upon geographic location. But  
8 they weren't an attempt to show causal association,  
9 they were just an attempt to map it out. So I  
10 don't -- I think the answer to your question is no.

11 Q. All right. Well, I'll take no and strike  
12 everything else, then. Move to strike everything  
13 else. No, that's all right.

14 Now, obviously -- or do you have  
15 opinions -- obviously, I represent a brake  
16 manufacturer -- excuse me. I represent Chrysler  
17 Corporation. Excuse me. Let me get this straight.  
18 We may have brakes on our cars because we want them  
19 to stop.

20 Do you have any information about the  
21 types of asbestos that would have been used in the  
22 brake linings we would have manufactured or used?

23 A. I don't know specifically for Chrysler,  
24 but I do know that in my career I was involved  
25 quite heavily in doing studies of a major brake

1 manufacturing facility, that being Raybestos  
2 Manhattan. And, principally, the type of asbestos  
3 used in that manufacturing facility -- whether or  
4 not cites later used that I don't know -- was  
5 chrysotile asbestos. But there were some mixed  
6 exposures.

7 Q. And the mixed exposures you're referring  
8 to would have been at the Raybestos Manhattan  
9 plant?

10 A. In manufacturing of the material, yes.

11 Q. And so you don't have any information  
12 that Chrysler would have used any brakes that had  
13 anything other than chrysotile in it; is that  
14 right?

15 A. I do not have any other type of  
16 information. I don't know what type of brakes. I  
17 don't even know where Chrysler bought the brakes.

18 Q. Now, there are obviously different types  
19 of asbestos, both amphiboles and serpentine and  
20 chrysotile asbestos. In your opinion, can  
21 chrysotile asbestos cause mesothelioma?

22 A. I've published in this American Journal  
23 of Health, British Occupational Hygiene Journal in  
24 '97. Those are included in my time line. They're  
25 also included in papers that are in the notebook

1 here. And my opinion is yes, chrysotile can cause  
2 asbestos-related disease.

3 Q. And by chrysotile, I'm attempting to  
4 refer to pure chrysotile without any contaminant of  
5 any type.

6 A. Very rarely do we find pure chrysotile,  
7 because most chrysotile is contaminated with  
8 amphiboles such as tremolite. And there have been  
9 very few, if any, studies that I know of that have  
10 looked at pure chrysotile, because they haven't  
11 been really able to identify pure chrysotile.

12 Q. Do you know anything about the processing  
13 that's done with chrysotile ore, once it's taken  
14 from the mine, before it can be used in other  
15 products? Have you studied that?

16 A. What do you mean by processing? I'm not  
17 sure I understand the question.

18 Q. My understanding is, is that they take  
19 chrysotile ore and dig it out, for instance, like  
20 you would coal, strip mining?

21 A. Well most of the -- with few exceptions,  
22 most of the mines for asbestos in the world are  
23 strip-type mines. And there are some underground  
24 mines, but those are very few and not really used  
25 for commercial purposes anymore, to my knowledge.

1 Q. After the ore is taken out, they have to  
2 process it before they can get it to the point that  
3 it can be used or incorporated into any products?

4 A. They take it into a mill, where they  
5 grind the ore away from the fibers and separate the  
6 fibers, trying to get all of the non-asbestos ore  
7 out of the material, and then it is shipped for  
8 process manufacturing.

9 Q. Do you know anything about the various  
10 grades of chrysotile ore that have been used in  
11 different --

12 A. There are different grades. I'm not  
13 really an expert on the different grades. I know  
14 they are listed in the company, but I haven't  
15 really compared one grade to another grade.

16 Q. Have you ever seen any studies that  
17 indicate that, based upon a test of a brake lining,  
18 anyone has ever found tremolite in a brake lining?

19 A. I don't know.

20 Q. Have you ever seen any tests or studies  
21 on dust from brake linings that indicate anyone  
22 ever found tremolite in the dust from a brake  
23 lining?

24 A. I don't know. I have not seen any lists,  
25 put it that way.

1 Q. Obviously, there are those who believe  
2 that chrysotile, to cause mesothelioma, either  
3 there must be intense, enormous concentrations or  
4 it can't cause it at all. You're aware of that?

5 A. I am aware of the scientific debate.

6 Q. So you would agree that there's a debate  
7 in the scientific community about that?

8 A. Yes, I believe that chrysotile can cause  
9 mesothelioma. That's correct.

10 Q. Thank you.

11 MR. HAINES: Better cut back on your  
12 coffee.

13 Q. (By Mr. Harton) You know where I'm going  
14 and I appreciate the help, but you know how records  
15 are. So excuse me.

16 Now, brake linings, let's talk about  
17 brake linings and regulations, I guess, for a  
18 minute.

19 Today, 1999, brake linings can be  
20 manufactured and used with asbestos in them in the  
21 United States, right?

22 A. That's correct.

23 Q. There is no regulation that has ever  
24 prohibited brake linings from containing asbestos?

25 A. Well, I don't know how you would classify

1 this, but when EPA tried to ban the use of asbestos  
2 and then it was overturned by the 5th Circuit, I  
3 don't know if -- there was an attempt to do it, but  
4 it was not upheld in the courts.

5 Q. But at least the regulations that have  
6 been enforced by our government have never banned  
7 the use of asbestos in brake linings, right?

8 A. With that one exception. And I don't  
9 think it banned the use, but it did try to ban the  
10 use of asbestos in general. I don't think it was  
11 specific for brake linings.

12 Q. But the -- I just want to make a  
13 distinction so you understand. I'm talking about  
14 regulations that were enforced as opposed to  
15 proposed legislation that was not enacted.

16 A. I agree.

17 Q. With regulations that have been enforced  
18 by our government, they have never banned the use  
19 of asbestos in brake linings?

20 A. To the best of my knowledge, that's  
21 correct.

22 Q. Other than -- there was one study in  
23 Exhibit 4 -- let me get to it -- CIB bulletin,  
24 August 1975.

25 A. Yes, sir.

1           Q.     Do you have any other government -- I  
2     guess I'll call them studies of dust that would be  
3     in brake drums?

4           A.     I didn't include everything, but there  
5     are a number of health hazard evaluations that  
6     NIOSH has done that have been in response to  
7     looking at asbestos exposure in brakes.

8                 As a matter of fact, NIOSH did a very  
9     large study looking at prevention of -- and  
10    prevention and suppression of dust. And I think,  
11    as he was just pointing out, there's the EPA  
12    guidelines that are included in that also.

13                But I did not try and put together a  
14    complete list of all the health hazard evaluations.  
15    There are many of those, and they don't really add  
16    to -- I mean, there are some in there, but it's not  
17    comprehensive.

18           Q.     So you'll know, I may -- I'm going to ask  
19    some questions now. I'll look through some of  
20    this. I may have some more after I look through  
21    that as opposed to me trying to guess what you're  
22    doing. But let me look through this. It will make  
23    things a lot easier and a lot less confusing.

24                You would agree that in 1999 there is a  
25    permissible exposure limit to asbestos that's

1 Q. But after abatement contractors go into a  
2 school, they have to test the air to make sure that  
3 the quantity of asbestos is below some number  
4 before they can send the kids back?

5 A. I can tell you in answer to that that the  
6 .01 was a recommendation that NIOSH made for  
7 abatement. I don't know if EPA adopted that, but  
8 that was one that we made based upon background  
9 level of asbestos and the ability of the microscope  
10 to measure down to that concentration.

11 Q. And this recommendation you said that  
12 NIOSH made, would that have been back mid 80's, I  
13 think, or do you remember?

14 A. It was around the mid '80s. I can't give  
15 you an exact date.

16 Q. I know we didn't go through it. It's on  
17 your CV. What was your position until the mid  
18 '80s at NIOSH?

19 A. I was director of the Division of  
20 Standards Development and Technology Transfer,  
21 which was the division that formulated the policy  
22 recommendations of the institute. And that was one  
23 of them.

24 Q. The United States, in making their PELs,  
25 or OSHA, I should say, making its PEL, they have

1 permitted in this country; is that right?

2 A. Yes, sir.

3 Q. That is .1 fiber per cc. on a time  
4 weighted average, is that right?

5 A. Yes, sir.

6 Q. The OSHA PEL is done by a PCM count,  
7 right?

8 A. Phase contrast microscopy.

9 MR. HAINES: If you just left it as  
10 PCM it would be easier.

11 THE WITNESS: I just want to make  
12 sure that what you meant by PCM was the  
13 same thing I meant by PCM.

14 MR. FALK: If you'd been here  
15 yesterday you would have known about that.

16 Q. (By Mr. Harton) You're aware that there  
17 are even regulations dealing with the ambient --  
18 excuse me, let me start over.

19 You're aware that the EPA has created  
20 regulations governing post- abatement air in  
21 schools that they define as clean air, right?

22 A. Yes, sir.

23 Q. And that is .01 fiber per cc., right?

24 A. I can't tell you exactly off the top of  
25 my head.

1 not made a distinction between amphibole asbestos  
2 and serpentine; right?

3 A. That's correct.

4 Q. But you are aware that there are other  
5 governments, Britain, Canada for instance, that  
6 make a distinction between the two types of fibers  
7 in coming up with a PEL?

8 A. I think now the U.K. and Britain have  
9 banned all uses of asbestos. They used to make a  
10 distinction, but I don't think that they do now. I  
11 think that they just promulgated new regulations  
12 that are about 11 countries that have now  
13 officially banned the use of all forms -- new --  
14 how do I want to say it -- importation or use of  
15 asbestos in the future. But, yes, I agree with  
16 you, there are countries that distinguish between  
17 the various types of asbestos.

18 Q. Now, Mr. Raper, do you know when --  
19 assume -- do you believe that he stopped using car  
20 brakes or working with them in 1965, based on your  
21 review of this information?

22 A. I don't know the exact date, but  
23 somewhere in that neighborhood, yes.

24 Q. Do you know of any articles that would be  
25 published either -- including your time line,

1 No. 3 --

2 A. Can I look at the time line for just a  
3 second?

4 Q. Okay, that's fine. -- that would attempt  
5 to study epidemiologically end users of brake  
6 linings before 1965?

7 A. There were case reports prior to 1965.  
8 Epidemiologic studies, I think the answer is no.

9 Q. So prior to 1965 there were no  
10 epidemiological studies of the end users of brake  
11 linings, indicating that they had an increased risk  
12 of getting any asbestos-related disease?

13 A. There were case reports, but the  
14 epidemiologic studies, I think the answer is no.

15 Q. Okay. I went through and looked at some  
16 of your old time lines and tried to pull some of  
17 the articles. And can you tell me which ones they  
18 are? Could you just take a minute? We can  
19 either -- I'd just like to talk about those for a  
20 minute.

21 A. You mean case reports.

22 Q. The case reports you're talking about.

23 A. Let me get over here to the right page.

24 The first one I think that I mentioned  
25 was the Fulton Report of 1935.

1 Q. I'm going to stop you for just a minute  
2 because I've got that one.

3 MR. FALK: Fulton, did you say?

4 MR. HARTON: Fulton.

5 THE WITNESS: Fulton, 1935.

6 MR. FALK: That's the Commonwealth of  
7 Pennsylvania?

8 MR. HARTON: Yeah.

9 THE WITNESS: I would just guess  
10 that.

11 Q. (By Mr. Harton) The Fulton study, would  
12 you agree with me that this was -- if you look at  
13 page -- I've got a copy of it here. Is this the  
14 Fulton -- it's not a good copy, but let me just  
15 show it to you. This is a copy.

16 A. Yes, that's it.

17 Q. It's a poor-quality reproduction. I'm  
18 sorry.

19 A. Right.

20 Q. In attempting to read -- I've put a  
21 little red mark there. Let me just quote this  
22 incident, see if you can agree with what I said.  
23 It says -- this article says, quote, The industry  
24 in this state consists mainly of several  
25 fabricating plants engaged in the making of

1 asbestos cloth, brake lining, insulating tape,  
2 asbestos rope and wick and other miscellaneous  
3 products.

4 Right?

5 A. That's correct.

6 Q. So the Fulton article really deals with  
7 what I will call the manufacturing of brake linings  
8 as opposed to end users, right?

9 A. That's correct.

10 Q. If you will go to the next article.

11 A. 1935, another article by -- in Great  
12 Britain.

13 Q. Is that the HMSO?

14 A. Yeah, that's Her Majesty's Stationary  
15 Office. Basically, the equivalent report that  
16 would come out, like OSHA or Public Health Service.  
17 They talk in that report about the sawing, grinding  
18 and turning of brakes.

19 Q. Do you agree with me that this --  
20 principally, the HMSO study -- I've got a copy if  
21 you want to look at it, again, it's a bad  
22 quality -- principally dealt with the manufacturing  
23 of products in the industry as opposed to end  
24 users.

25 MR. HAINES: Object, vague as to

1 "principally."

2 THE WITNESS: Well, I think  
3 technically your answer is correct, but it  
4 applies to the end user, because they're  
5 talking about grinding and turning of the  
6 brakes. And that's how I would interpret  
7 it.

8 Q. (By Mr. Harton) Would you go to the next  
9 article please, sir.

10 A. 1939, the George and Leonard. Do you  
11 have that one? This is in brake manufacturing  
12 workers.

13 Q. Yeah. This is brake manufacturing  
14 workers, right?

15 A. Right.

16 Q. Go to the next one.

17 A. 1940, article by Stone. Do you have that  
18 one? To answer your question, brake lining  
19 manufacturing workers.

20 Q. All right. Next?

21 A. 1941, the Brachmann paper. Do you have  
22 that one?

23 Q. No, I do not.

24 A. The risk of asbestosis among brake  
25 grinders and drillers. That was published in --

1 I've got these articles, I just didn't --

2 Q. Could you get that one? Because that's  
3 one that -- one way or another somehow it just  
4 didn't --

5 MR. HAINES: Do you have it here with  
6 you?

7 THE WITNESS: No.

8 Q. (By Mr. Harton) Just get us a copy for  
9 it. I've got a search out for it, but we haven't  
10 been able to locate it yet.

11 A. I'm pretty sure I have it. It may take  
12 me a while because a lot of my articles are on  
13 microfiche and it's sometimes hard to --

14 Q. Do it when you can. I understand. I've  
15 tried to find it as well and had troubles.

16 A. It was abstract, as you see in my  
17 reference, and to -- let's see, it was in the  
18 Journal --

19 Q. Obviously, do you have any recollection  
20 as to whether, when they're talking about grinders  
21 and drillers of brake bands, they're talking about  
22 the manufacturing process or end users?

23 A. I'm pretty sure they're talking about the  
24 manufacture. But I'd have to go back and look at  
25 that to make sure.

1 Q. I understand. We can look at it when you  
2 get it.

3 If you would go to the next article,  
4 please, sir.

5 A. My time line only carries me up to the  
6 passage of the Occupational Safety and Health Act,  
7 and the articles that were in the notebook carry on  
8 after that. So that's all I have in my time line,  
9 luckily.

10 Q. So we've discussed all the 1965 and  
11 earlier articles that deal with brake linings in  
12 any way under your time line?

13 A. There may be others, but I haven't  
14 included them in my time line.

15 Q. Okay. Well, they're not on your time  
16 line?

17 A. That's correct.

18 Q. The case -- earlier we talked about case  
19 reports. Are the case reports you were referring  
20 to earlier about maybe a brake lining worker  
21 getting asbestos-related disease, are those the  
22 articles we just went through?

23 A. Yes, sir.

24 Q. Your work at the Raybestos Manhattan  
25 plant, that was, I think, in the 1970s or '80s or

1 when?

2 A. I first went in the Raybestos plant in  
3 the early '70s. I did a mortality study of workers  
4 in that plant. The first publication is listed on  
5 my CV of that plant. It actually appeared as a  
6 report to the Congress of the United States and  
7 appeared in the Congressional reports, the results  
8 of a mortality study. Then we continued to analyze  
9 and published, in 1976, I think, in the New York  
10 Academy of Sciences' Occupational Cancer Symposium,  
11 the update of that. And that senior author on that  
12 second publication was Robinson. It's listed in my  
13 CV. So I was also involved in the industrial  
14 hygiene survey of the Raybestos Manhattan plant.  
15 This is the plant in Manheim, Pennsylvania.

16 Then I also was involved in the  
17 industrial hygiene and medical survey in the plant  
18 -- Raybestos plant in Charleston, South Carolina.

19 Q. We'll focus on the Pennsylvania plant.

20 A. The Pennsylvania plant was the one that I  
21 spent the most time in.

22 Q. The Pennsylvania plant, that's one that  
23 you would have started the study of the plant  
24 workers, I would say, in the 1970s?

25 A. Yes, sir.

1           Q.     Now, brake products, would they be  
2 defined as friable or nonfriable under the EPA  
3 definition?

4           A.     I think the brake products in the final  
5 form would be considered nonfriable. But I'm not  
6 an expert on the EPA definition.

7           Q.     Do you know anything at all about any  
8 trade associations or other organizations that  
9 Chrysler may have been a member of?

10          A.     I haven't specifically looked at  
11 Chrysler, no, sir.

12          Q.     Now, mesothelioma is a disease. I  
13 think -- was it first linked to asbestos exposure  
14 by, I think, Dr. Wagner around 1960?

15          A.     Well, there were reports of mesothelioma  
16 as early as 1943 from Germany. There were reports  
17 from the Canadian asbestos mines in 1952, I think  
18 that was. And there were other case reports that  
19 occurred prior to Dr. Wagner's paper in 1960. And  
20 his paper in 1960 was related -- the first  
21 comprehensive epidemiological evaluation of workers  
22 engaged in the mining, milling and community  
23 exposures dealing with asbestos.

24          Q.     So Dr. Wagner's work, that is, I think,  
25 published in 1960, was the first epidemiological

1 study that linked asbestos exposure to the disease  
2 mesothelioma?

3 A. By that time that was the conclusion that  
4 he came to, yes, sir.

5 Q. And Dr. Wagner, in 1960, I think, was  
6 studying mines in South Africa?

7 A. That's correct.

8 Q. Was that principally crocidolite?

9 A. That's correct.

10 Q. At what point in time were there  
11 epidemiological studies that attempted to determine  
12 that chrysotile could cause mesothelioma?

13 A. Let me just refer to this. Wagner did  
14 mention chrysotile but didn't find any disease.  
15 And he attributed that to the fact that they had  
16 shorter latencies and there was a large turnover.  
17 But then McDonald looked at chrysotile in the  
18 Canadian mills and mines in the early '70s. So I  
19 think most of the data on chrysotile  
20 epidemiologically, case reports started occurring  
21 when McDonald started looking at the chrysotile  
22 mines and mills in the Canadian area.

23 Q. What -- which is the first article you  
24 have on your time line, just so I'll know?

25 A. Well, Cartier, 1957.

1 Q. I mean the epidemiological McDonald  
2 study. There have been so many. That's what I'm  
3 trying to find.

4 A. McDonald. I'm sorry.

5 Q. Is that the early '70s?

6 A. 1973. Let me get -- asbestosis. The  
7 first article that I have in my time line appeared  
8 in IARC Scientific Publication No. 8 on the  
9 chrysotile mines and mills. And there were two  
10 papers, actually, one on asbestosis and the second  
11 one on cancer from the mills, and they were both  
12 IARC scientific publications. I have those. I  
13 mean, I didn't bring them.

14 And then McDonald has another paper in  
15 1977 on exposure relationships and mesothelioma  
16 and the proceedings of the Asbestos Symposium in  
17 Johannesburg, South Africa. And then there are a  
18 series of other --

19 Q. Others, that's fine. I'm just looking  
20 for the earliest, and that's all I need. I think  
21 you answered that.

22 When you would do air samplings, -- and  
23 I'm sure a lot of them were done while you were at  
24 NIOSH -- did NIOSH always use the phase contrast  
25 microscopy in counting fibers?

1       A.       Well, when I was at NIOSH, yes. Prior to  
2 my coming and even after I came, for a while they  
3 were also looking at total dust by using the  
4 impinger method of sampling for particles per cubic  
5 foot. And when I first came to NIOSH, we also, in  
6 addition to the phase contrast microscopy, is used  
7 these gigantic, high-volume samplers that we would  
8 sit in the middle of an area of an asbestos plant  
9 that would pull very high volumes of air through.  
10 And those were looking at weight of dust and total  
11 dust that was in the atmosphere. So -- but for  
12 personal samples, the only type that I ever took  
13 were the membrane filter, PCM-type samples.

14       Q.       In the work that you or others would have  
15 done, I assumed for you, at NIOSH, did they always  
16 use direct preparation techniques?

17       A.       I'm not sure I know what you mean by  
18 direct preparation.

19       Q.       For instance, there are a number of  
20 different types of techniques to sample for  
21 particulate matter in the air, be it asbestos or  
22 something else. One I know that the phase contrast  
23 microscopy requires is taking a filter, adding  
24 personal samples, for instance, having air drawn  
25 with particulate matter in it. Then they count

1 what's on the filter. That's what I call the  
2 direct method.

3 A. The answer to that is yes. And it was  
4 directly related to the NIOSH 7400 analytical  
5 methodology.

6 Q. Because that's what's required?

7 A. Right.

8 Q. You do not accept other types of methods  
9 for comparison to OSHA PEL, would you?

10 A. I don't know what you're getting at, so I  
11 don't know if I can answer that. But that's an  
12 area that is somewhat beyond the area of my  
13 expertise.

14 Q. Well, for instance, when you or others at  
15 NIOSH were out there sampling to determine  
16 workplace exposures, you would comply with the OSHA  
17 requirements for sampling dust in the air, and that  
18 would be 7400, the direct method?

19 A. Well, OSHA was using our methodology,  
20 yes, sir.

21 Q. So it would comply with your own  
22 methodology, right? Either way?

23 A. We developed the methodology that was  
24 later employed by OSHA in their sampling.

25 Q. In sampling.

1           Have you ever sampled or looked at the  
2 dust in brake drums to determine how much of that  
3 dust is converted to forsterite?

4           A.       NIOSH has. I have not personally.

5           Q.       Are those articles at all in either  
6 Exhibit 4 or your time line?

7           A.       I think they're mentioned in there. But  
8 I don't know specifically if they determine the  
9 amount of forsterite that's produced. I think it  
10 depends upon the use of the brake and the heat of  
11 the brake as to the amount of forsterite. I don't  
12 know that I've ever seen it totally quantified, if  
13 that's what you're getting at. But I'll certainly  
14 agree with you that it does occur and to an extent.

15          Q.       I'll look through 4 and see if there are  
16 quantifications, and we'll talk about that in a  
17 minute. I'm not going to bore you with it now.

18                 But on that same line, in looking at the  
19 drum dust, do you know of quantifications of the  
20 amount of fibers, asbestos fibers, now that would  
21 be greater than five microns in length that have  
22 been seen in various studies?

23          A.       I think that -- you mean after the brake  
24 is used or --

25          Q.       Brake drums and discs.

1 A. In the composition of the brake?

2 Q. After it's been used.

3 A. I think the Lorimer paper goes into some  
4 quantification, talks about the average amount of  
5 fibers found in the brake dust. I think his  
6 greatest concentrations were found three to five  
7 feet away from the brake drum after it had been  
8 blown, and the average concentration was somewhere  
9 around 15 fibers per cc. greater than five micron.  
10 There's a table in there if you want me to point it  
11 out.

12 Q. Yeah, I think I found it. Let me look  
13 through this. I'm just talking about the size and  
14 length of the fibers, that they were --

15 A. Well, they were only counting greater  
16 than five micron in length. So they weren't  
17 counting below five micron in length. So what I  
18 was referring to would have referred to those that  
19 were greater than five micron.

20 Q. The manufacturing process for making the  
21 brake lining, that would obviously include various  
22 bonding resins and Lord-only-knows-what to make it  
23 stay together, right?

24 A. Right.

25 Q. And part of the brake lining is obviously

1 -- or some of them would have contained asbestos,  
2 right?

3 A. Yes.

4 Q. The bonding agents, mastics, resins,  
5 whatever they are, would affect the aerosol dynamic  
6 properties of the asbestos fibers if they're ever  
7 released?

8 A. They could.

9 Q. And if bonding agents or mastics were  
10 still attached to an asbestos fiber, that could  
11 prevent it from being inhaled and retained in the  
12 lungs?

13 A. It could, yes, sir.

14 Q. I'm going to look through your articles  
15 and things like this. I'm sure I'll have some  
16 questions. But I'd like to look through this, and  
17 at some point in time I'm going to take -- I'll  
18 just do this later.

19 A. What is that?

20 Q. Your disclosure, one of the things we  
21 get. Maybe I can just ask you this now. I'm going  
22 to talk about these articles. I represent  
23 Chrysler, and we've got a case next week. And I  
24 don't know if you've seen this, but this is the  
25 disclosure that I have given.

1 A. I think this is a standard disclosure.

2 Q. Yeah, it's a standard disclosure.

3 Let me ask a question and you can tell me  
4 if I'm wrong. I'm trying to find out if I've  
5 touched on the areas you were going to testify  
6 about Chrysler Corporation. For instance, when you  
7 get to trial, is there anything I haven't covered?  
8 And if there is, let me know.

9 MR. HAINES: Object to the question  
10 of having him anticipate, without knowing  
11 how he's going to respond to questions that  
12 we ask him. And to say, well, have you  
13 testified as to anything about Chrysler, I  
14 don't think that's a proper question.

15 MR. ELLISTON: Excuse me. At this  
16 point I want to register an objection.  
17 Plaintiff's counsel is going beyond simply  
18 stating an objection to the form. Under  
19 the new rules, anything beyond "objection  
20 to form" is inappropriate. So I object to  
21 plaintiff's counsel going beyond that  
22 objection.

23 MR. HAINES: Duly noted.

24 Q. (By Mr. Harton) You can respond. You  
25 can respond, Dr. Lemen.

1           A.       I've -- as far as I know, unless I'm  
2 asked questions that I can't anticipate, you've  
3 covered everything. But, I mean, I have to put  
4 that in, because if plaintiff's counsel asked me a  
5 question and you haven't anticipated it, I will --  
6 and I knew the answer, I would give an answer.

7           MR. HARTER: Well, let me look  
8 through some articles and I'll let some  
9 other folks talk to you.

10                   CROSS-EXAMINATION

11 BY MR. FALK:

12           Q.       Good morning, Doctor. My name is Eric  
13 Falk, I represent Allied Signal.

14                   My first question to you is, has anybody  
15 shown you any documents pertaining to Allied Signal  
16 or its predecessor, the Bendix Corporation?

17           A.       I don't believe so.

18           Q.       Okay. Have you ever conducted or worked  
19 on any industrial hygiene surveys at airline  
20 maintenance facilities?

21           A.       Specifically looking at asbestos, no.  
22 But I have at airline maintenance facilities, and  
23 I've published on -- just so the record is  
24 straight -- on principally looking at  
25 cardiovascular disease among airline refueling

1 operations, around airline maintenance facilities.

2 And we've published on that from exposure to carbon  
3 monoxide, but not as it relates to asbestos.

4 Q. Okay. And I take it, then, you certainly  
5 have not participated in any industrial hygiene  
6 surveys at either Dallas-Ft. Worth Airport or Love  
7 Airfield?

8 A. That's correct.

9 Q. Okay. I want to look at the -- talk to  
10 you a bit about chrysotile epidemiology. And I  
11 want to focus on epidemiology. And let's put off  
12 to the side for a moment animal studies and then  
13 we'll get back to that.

14 Would you agree that the McDonald cohort  
15 in Canada is the largest ongoing chrysotile-only  
16 cohort?

17 A. I would agree that it's probably the  
18 largest. I don't know of others that are larger.  
19 We do have a study ongoing that was initiated by  
20 NIOSH while I was still at NIOSH.

21 Q. Is that the South Carolina --

22 A. No, no. Well, that's one that was done.  
23 But we have an ongoing study, which the results  
24 have not been published yet. And I'm not a part of  
25 it anymore because I'm not at NIOSH. But I

1 initiated the study of the chrysotile mines in the  
2 Siberian area of Russia. It's a joint study with  
3 NIOSH, the Finnish Institute and the Russian  
4 Institute. And the only results so far, to my  
5 knowledge, that have been published are the  
6 industrial hygiene samples of several hundreds of  
7 samples that were taken in that. And that is  
8 bigger, as far as volume, than the McDonald. But  
9 the epidemiology and medical are still ongoing, to  
10 the best of my knowledge.

11 Q. So I think the first part of your answer  
12 was that if we looked at published epidemiology you  
13 would agree that the McDonald Quebec cohort is the  
14 largest published cohort?

15 A. I agree.

16 Q. Are you familiar with the articles of the  
17 McDonald group published in '97 and '98, about five  
18 or six of them?

19 A. I think I've read every one that Corbett  
20 and his wife Allison have put together. And I know  
21 both of them pretty well, so --

22 Q. Okay. Then maybe we can short-circuit  
23 this. And rather than breaking out the articles,  
24 I'm going to try to summarize the results. You  
25 tell me if my summaries are wrong, and if we're

1 right we're going to move on.

2 A. Okay.

3 Q. They found that the excess of lung cancer  
4 mesothelioma arose predominantly from the central  
5 area of the Thetford mines, correct?

6 A. I believe that's correct.

7 Q. And they also found there was a high  
8 level of tremolite contamination in the central  
9 area of the Thetford mines, correct?

10 A. I believe that's true.

11 Q. And they found that even within the  
12 central area of the Thetford mines, the excess does  
13 not arise until you get to exposures that are  
14 roughly at five to six million particles per cubic  
15 foot; is that correct?

16 A. Somewhere in that neighborhood. I can't  
17 remember the exact number.

18 Q. Or if we wanted to just put it in some  
19 kind of lingo, the old ACGIH standard, roughly in  
20 that neighborhood?

21 A. I believe that's what they were using.  
22 The authors concluded that it was -- from an  
23 epidemiological point of view, the tremolite, that  
24 was the reason for the excess in mesothelioma,  
25 correct. I believe that is a part of the

1 conclusion. But I think that McDonald also  
2 concluded that they had found -- if I can remember  
3 exactly how they put it, they had found  
4 mesothelioma to occur in ones that did not have  
5 tremolite contamination, but very few.

6 Q. Okay. Those were from the peripheral  
7 areas of Thetford?

8 A. Yes, sir.

9 Q. And they did not find an excess rate in  
10 the peripheral areas, correct?

11 A. They did not find it, as compared to a  
12 standard population. But they did find  
13 mesothelioma.

14 Q. One of the things that the McDonald's  
15 focused on as they looked at the possibility of  
16 tremolite contamination was bio-persistence and  
17 durability of fibers; correct?

18 A. That's correct.

19 Q. And tremolite would fit, would be a  
20 candidate that would fit the issue of  
21 bio-persistence and durability, correct?

22 A. If you're talking about, simply put,  
23 residence time in the lung, that's correct.

24 Q. Chrysotile is not as bio-persistent and  
25 is not as durable, correct?

1           A.     Chrysotile gets into the lung and gets  
2 out of it quicker than the amphibole-type fibers.

3           Q.     And you're familiar with the clearance  
4 rates and the studies on the clearance rates for  
5 chrysotile, correct?

6           A.     Yes, sir.

7           Q.     Are you familiar with any studies  
8 pertaining to man-made mineral fibers, their  
9 biopersistence and durability and their possible  
10 impact on the development of mesothelioma?

11          A.     By man-made mineral fibers, do you  
12 include such things -- are you talking just  
13 epidemiology now or are you talking animal studies?

14          Q.     This would be animal studies.

15          A.     If you're talking -- do you include  
16 refractory ceramic fiber in that definition?

17          Q.     Yes, fiberglass refractory ceramic fiber.

18          A.     There are fairly new animal studies on  
19 refractory fibers coming out of Geneva-sponsored  
20 studies by I guess it's Thermal Insulation  
21 Manufacturers Association that have shown  
22 mesothelioma occurring in fairly high numbers in  
23 animals that have been exposed to respirable  
24 refractory ceramic fibers. And those are just in  
25 the process of being published. I happen to have

1 copies of the pre-published articles.

2 Q. And have you read Dr. Hesterberg's work  
3 on man-made mineral fibers?

4 A. Yes, sir.

5 Q. If we were to look solely at  
6 epidemiology, is it still your opinion, that is,  
7 from an epidemiological point of view, there is a  
8 lower risk of mesothelioma among chrysotile  
9 populations as opposed to amphibole populations?

10 A. In the 1996 publication that I did with  
11 Leslie, Stayner and Dankovic in the American  
12 Journal of Public Health, we concluded that  
13 mesothelioma can occur in chrysotile populations,  
14 but it is at a lower rate than it would occur in an  
15 amphibole population, but still at a significant  
16 level.

17 Q. Do you still agree that case reports are  
18 not as strong as an epidemiological study?

19 A. Of course.

20 Q. Kind of a handy layman's analogy that  
21 I've used.

22 And I'll throw this out to you, and you  
23 tell me whether you like it or not, is that a case  
24 report can frame the question, the epidemiology  
25 provides the answer. Does that sound acceptable?

1           A.     Case reports are usually what we use to  
2 generate hypotheses for conducting epidemiological  
3 studies. So I think we're saying the same thing.

4           Q.     Do you agree with the proposition that an  
5 epidemiologist should look for a relative risk of  
6 two or greater in order to associate an agent with  
7 a disease?

8           A.     I don't agree with that specifically, no.

9           Q.     Okay. Do you agree that that is a view  
10 held by many epidemiologists in your field?

11          A.     I won't put many. I'll put that it is a  
12 view held by some epidemiologists in my field.

13          Q.     What relative risks do you look for?

14          A.     It depends on the size of the cohort.  
15 You could have a significant excess relative risk  
16 if you had a large cohort and a large exposure  
17 than, say, even at 1.5 or even lower. It depends  
18 upon the population you're studying. And I think  
19 that arbitrarily assigning 2 as the cutoff point is  
20 not something that I would do, and it's not  
21 something that we did when I was at NIOSH.

22          Q.     Are you aware of any epidemiological  
23 study of automobile mechanics or brake repair  
24 workers, end users, not manufacturing plants,  
25 showing an increased risk of mesothelioma in the

1 populations?

2 A. Epidemiologic studies?

3 Q. Um-hum.

4 A. I would have to go back and look at my  
5 book. I can't answer that question right now.

6 MR. HARTON: This one? Here. Go  
7 ahead.

8 Q. (By Mr. Falk) One of the MedLine  
9 summaries you have in your book is the Woitowitz  
10 and Rodelsperger 1994 article.

11 You have a MedLine summary of that  
12 article in your notebook. Have you read the  
13 article itself?

14 A. I have sometime ago. I haven't read it  
15 recently.

16 Q. Do you recall what the author's  
17 conclusion was?

18 A. Well, if you know exactly where it's at  
19 in here, it would help me.

20 Q. It's one of the larger, bold print.

21 MR. HARTON: Towards the front, yeah.  
22 Very early.

23 THE WITNESS: It was one of the very  
24 first ones. I remember that. Yeah, okay.

25 Okay.

1 Q. (By Mr. Falk) When was the last time you  
2 looked at that article, Doctor?

3 A. I can't remember.

4 Q. Okay. Do you recall the conclusions of  
5 the authors of that article?

6 A. As in the summary, yes, sir.

7 Q. The conclusions were that they found no  
8 increased risk of mesothelioma in the car mechanics  
9 in Germany?

10 A. That none occurred, that's correct.

11 Q. Are you aware that Drs. Woitowitz and  
12 Rodelsperger have been studying car mechanics,  
13 their exposure and disease rate, in Germany since  
14 the mid 1980s?

15 A. I don't know when they started.

16 Q. Are you aware of any of their prior work?

17 A. Not other than what's in here.

18 Q. Is it still true that you don't think of  
19 yourself as an expert in dust dispersion and  
20 aerosol dynamics?

21 A. I've never presented myself as that.

22 Q. You have not participated in any fiber  
23 release testing of friction products?

24 A. No, sir. Here is the book back, unless  
25 you want --

1 MR. HARTON: I don't know if you --  
2 thanks.

3 Q. (By Mr. Falk) Other than the Phoenix  
4 ground water case, which I know is not an asbestos  
5 case, have there been any other cases where your  
6 testimony has been excluded or limited?

7 A. Not to my knowledge.

8 Q. Okay.

9 A. There have been cases where there's  
10 summary judgment, but I don't think it was directed  
11 at me particularly.

12 Q. I don't want to get into the Phoenix  
13 ground water case, not unless we have about an hour  
14 to talk on that.

15 Are you aware of any attempts to quantify  
16 the projected mortality in brake repair workers?

17 A. No.

18 Q. I want to take a look at some of the  
19 articles that you cited in your article with  
20 Drs. Dankovic and Stayner.

21 A. Yes, sir.

22 Q. Okay. Do you have that article with you?

23 A. Yeah. It's somewhere around here.

24 Q. Just so we can read from it together  
25 without me looking over your shoulder.

1           A.     I don't know how it fell apart, but -- in  
2 fact, I've got it right here.

3           Q.     If you could turn to Table 1.

4           A.     Yes.

5           Q.     Okay. There are two articles I'm  
6 interested in that you put in the table as showing  
7 excesses of either lung cancer, mesothelioma or  
8 both. The first one is the Finkelstein article.

9           A.     The automotive, yes, sir.

10          Q.     Do you have a copy of that with you?

11          A.     No, I don't.

12          Q.     Okay. I'll pass it over. I just want to  
13 go through that rather quickly.

14                 Is it true that, if you turn to page 128  
15 of the article, they found that among men there  
16 were no diseases associated with a significantly  
17 increased SMR?

18           MR. HAINES: Hang on. Doctor, do you  
19 need a minute to review the article?

20          Q.     (By Mr. Falk) I'm sorry. Page 128, I'm  
21 looking at.

22          A.     Let me just look at it for a minute.

23                 Okay. What is your question?

24          Q.     Is true that Dr. Finkelstein found among  
25 men there were no diseases associated with a

1 significantly-increased SMR except for laryngeal  
2 cancer?

3 A. I'm having trouble reading this.

4 Q. It's as good a copy as I could get.

5 A. You're talking overall, or what are  
6 you -- you need to point that out. It's probably  
7 my bifocals.

8 Q. That's quite all right. Okay.

9 A. You say 128.

10 Q. Right. Okay. Right here. Among --  
11 first off, they studied two automotive parts plants  
12 in Ontario, correct?

13 A. Right.

14 Q. And brake parts were made at those  
15 plants, correct?

16 A. To my knowledge, that's correct.

17 Q. Okay. And here on page 128 they say that  
18 among men, no diseases except for laryngeal cancer  
19 were associated with a significantly increased SMR.

20 Have I read that part correctly?

21 A. That's correct.

22 Q. And then they go on to say that there  
23 were no trends of increasing SMR with increasing  
24 length of employment.

25 A. Right.

1 Q. Have I read that correctly?

2 A. Yes, sir.

3 MR. HAINES: Can I see it?

4 MR. FALK: Sure. When you're done  
5 with that I have a few more questions on  
6 that article, if you don't mind me looking  
7 over your shoulder.

8 THE WITNESS: No.

9 Q. (By Mr. Falk) Turn to page 129.

10 They then did a case control analysis in  
11 order to analyze whether there was an association  
12 between the employment and the asbestos-related  
13 diseases that they thought they had found, correct?

14 A. Right.

15 Q. And they concluded the case control  
16 analysis revealed no association between the risk  
17 of lung cancer and employment in a department where  
18 asbestos had been used or duration of employment.

19 A. Correct.

20 Q. And they go on and they say that even  
21 within the laryngeal cancers, none of the laryngeal  
22 cancers had worked in an area where asbestos had  
23 been used.

24 Correct?

25 A. Right.

1 Q. The next one I want to talk about in  
2 Table 1 is the McDonald article.

3 A. Right.

4 Q. Okay. This is the study of the  
5 Connecticut friction plant.

6 A. Is this Connecticut or is this the --

7 Q. I think it's Connecticut.

8 A. I thought -- yeah. Okay.

9 Q. Okay.

10 A. It was -- Connecticut was one plant,  
11 yeah.

12 Q. Yes. Okay. First off, the McDonald's  
13 found no mesotheliomas in that plant, correct?

14 A. That's what they report, yes, sir.

15 Q. Okay. And turning to lung cancer, the  
16 increased mortality that they found was due mostly  
17 to the people that had worked one year or less at  
18 the factory, correct?

19 A. Well, I don't know if you said it the  
20 right way. They say that excluding men who had  
21 worked for less than a year, there was possible  
22 evidence of some increased risk of lung cancer with  
23 increasing exposure. So it was occurring in those  
24 that were greater than one year.

25 MR. HAINES: That's actually the

1 opposite of what he said.

2 THE WITNESS: I think, if I've -- you  
3 said less than one year.

4 Q. (By Mr. Falk) Less than or equal to one  
5 year.

6 A. Right here. Unless they've misstated it  
7 in there.

8 Q. Let's go to page 155 of the article. And  
9 they talk about that the most confusing aspect of  
10 the study is the fact that the only subcohort with  
11 SMRs clearly above expectation comprises men  
12 employed for less than one year.

13 Correct?

14 A. That's total SMRs. That's in contrast to  
15 what you were asking about lung cancer.

16 Q. Then they go on to say, thus, were it not  
17 for the subjects with minimal employment or dust or  
18 dust exposure or both, the mortality experience of  
19 this cohort would be close to expected.

20 A. That's what they say there.

21 Q. Okay. Workers who work less than one  
22 year, we call those transient workers. Would that  
23 be a good way to phrase it?

24 A. They may not like to be called that.

25 Q. I understand. Scientifically, you tend

1 to call them transient workers?

2 A. Yes.

3 Q. Transient workers generally just have,  
4 perhaps because of their lifestyles, just higher  
5 risks for many diseases, many conditions, correct?

6 A. That's possible.

7 Q. Okay.

8 THE WITNESS: Can we go off the  
9 record for just a second?

10 (Recess taken.)

11 Q. (By Mr. Falk) Doctor, do you still agree  
12 that, with regard to fiber length, the  
13 preponderance of the evidence up until the 1980s  
14 was that fibers less than five microns in length  
15 did not lead to asbestos-related disease?

16 A. There's a preponderance of the evidence  
17 to answer yes, but there is some evidence there may  
18 be disease in these smaller, but that was the  
19 preponderance of the evidence.

20 Q. And you still believe that the longer  
21 fibers tend to be more carcinogenic than shorter  
22 fibers?

23 A. Yes, sir.

24 Q. You mentioned the Camus article. Are you  
25 familiar with any follow-ups or letters to the --

1 A. The what article?

2 Q. I call it Camus.

3 A. Camus?

4 Q. Camus. I call it Camus because of the  
5 French author.

6 A. Well, I didn't take French. I call it  
7 Camus.

8 Q. It could be either one.

9 You mentioned that earlier. Are you  
10 aware of any of the follow-up or letters to the  
11 editor that have come since that article?

12 A. Well, I know the editorial that  
13 accompanied the article. I have not read the  
14 follow-up letters.

15 MR. FALK: Okay. That's all I have,  
16 sir. Thank you.

17 CROSS-EXAMINATION

18 BY MR. GUSTAFSON:

19 Q. Dr. Lemen, I'm Ivan Gustafson of  
20 Pittsburgh Corning.

21 Have your opinions changed about  
22 Pittsburgh Corning since this time last week?

23 A. No.

24 Q. Have you seen anything new in the last  
25 seven days to change your opinion about Pittsburgh

1 Corning?

2 A. No.

3 Q. As a housekeeping question, part of  
4 Exhibit 5 was Volume I of the Raper deposition. Is  
5 that the one that you had brought with you and the  
6 one we had marked, or the one that we sent was a  
7 copy of one?

8 A. Did I maybe make a copy? It's what was  
9 sent to me. And the first part is missing every  
10 other page. So it's only a portion of it. And I  
11 didn't call back and ask for another copy because I  
12 didn't really rely that much upon it.

13 Q. So you received the Volume I of the Raper  
14 deposition in alternate page format, if you will?

15 A. Exactly like it is there, yes, sir. And  
16 that's just the first part of it. The second page  
17 is four-page format.

18 Q. With respect to the classification of  
19 persons called commercial airline mechanics, is  
20 that occupation one that has been identified by a  
21 government agency or state agency, to your  
22 knowledge, to have been at risk from or at risk for  
23 asbestos-related diseases?

24 A. I don't know. I don't know of any.

25 Q. Are you aware -- and I guess it would be

1 true, then, in your years of government work and  
2 following the literature, you're not aware of any  
3 pronouncement or proclamation from any government  
4 agency stating that commercial aircraft mechanics  
5 were an at-risk group for asbestos-related  
6 diseases, is that right?

7 A. I don't know of any.

8 Q. Did you review the work history of  
9 Mr. Raper?

10 A. Only as presented in the material that I  
11 received.

12 Q. Did you notice if he worked at a micarda  
13 plant for some period of time?

14 A. I'd have to look at it again.

15 MR. JOHNSON: I've taken the  
16 deposition out of there.

17 THE WITNESS: It should be on this, I  
18 think. Where did you see that? I'm just  
19 trying to --

20 Q. (By Mr. Gustafson) I believe it was 63,  
21 64, maybe the third or fourth.

22 A. You said micarda.

23 Q. Micarda plant in Hampton, South Carolina.

24 MR. HAINES: Herndon Motor Freight,  
25 Hampton, South Carolina.

1 Q. (By Mr. Gustafson) Before that page. I  
2 hate to do this, but let me come over there.

3 A. Okay. I saw Westinghouse, but I  
4 wasn't -- yes, sir.

5 Q. Are you familiar with that product,  
6 micarda?

7 A. No, sir.

8 MR. GUSTAFSON: That makes it short.

9 All right. That's it.

10 MR. FALK: Good job.

11 MR. HAINES: Next.

12 CROSS-EXAMINATION

13 BY MR. JOHNSON:

14 Q. Dr. Lemen, my name is Jonathan Johnson.  
15 I'm here today representing Georgia Pacific. I  
16 just have a few questions for you.

17 In this case have you been given any  
18 documents to review that directly refer to Georgia  
19 Pacific or a company called Bestwall?

20 A. Other than what I've shown here, that's  
21 the only material I've been given.

22 Q. Do you have any reason to believe that  
23 Mr. Raper worked with or around any joint compound?

24 MR. HAINES: Object to the form.

25 Go ahead.

1 THE WITNESS: It's my understanding  
2 that he did. But I haven't been asked to  
3 specifically identify the products or  
4 anything of that nature.

5 Q. (By Mr. Johnson) What's your  
6 understanding that he did based on?

7 A. The material that I read in here of his  
8 work history. And that's it.

9 Q. And that does include Mr. Raper's  
10 deposition, does it not?

11 A. Yes, it does.

12 MR. HAINES: It does.

13 Q. (By Mr. Johnson) Did you see that in  
14 Mr. Raper's deposition he testified that he -- his  
15 claim with respect to joint compounds was during  
16 the time period 1986 to 1998?

17 MR. HAINES: Object to form.

18 THE WITNESS: I don't remember the  
19 exact dates.

20 Q. (By Mr. Johnson) Do you have any  
21 knowledge as to whether any of the joint compounds  
22 that Mr. Raper may have worked around contained any  
23 asbestos at all?

24 A. I don't know.

25 Q. Do you know whether any joint compounds

1 manufactured after 1986 would have contained  
2 asbestos?

3 A. I don't know the answer. They could  
4 have. By law they could have. But I don't know.

5 Q. Do you know whether Georgia Pacific ever  
6 manufactured any joint compound that contained  
7 asbestos?

8 A. I don't know.

9 Q. Are you aware of any studies regarding  
10 the impact of working with or around joint  
11 compounds on the health of the workers?

12 A. I know that there are studies that show  
13 that carpenters and other people employed that  
14 would use joint compounds but have other exposures  
15 are at increased risk of developing  
16 asbestos-related diseases.

17 Q. Okay. Do you know of any studies that  
18 would say that people other than those you just  
19 mentioned would be at risk just because they happen  
20 to be in the vicinity?

21 A. Dr. Selikoff did some research in his  
22 group on looking at bystanders, if that's what  
23 you're getting at. And so there are studies out  
24 showing that workers that didn't work directly with  
25 an asbestos product but were working in the

1 vicinity of others that were working with asbestos  
2 products were at an increased risk of developing  
3 disease.

4 Q. Okay. And what specifically are the  
5 studies by Dr. Selikoff that you're referring to?

6 A. Well, the one that shows that they're at  
7 risk by looking at exposure is a study that Reitze,  
8 R-E-I-T-Z-E -- I think it's listed in my time  
9 line -- has conducted, looking at people directly  
10 applying asbestos insulation and then looking at  
11 welders and others that are not directly in the  
12 area but around the area that have higher exposure  
13 levels to asbestos. And that's the type of work  
14 that he was doing.

15 Q. Okay. Did that study include anything  
16 with respect to joint compounds?

17 A. I don't know. I don't think so.

18 Q. Do you think there may be differences  
19 between asbestos insulation and joint compounds?

20 A. Yes.

21 Q. Sir, do you have any knowledge as to  
22 whether joint compounds would contain friable  
23 asbestos?

24 A. You mean friable?

25 Q. Friable, sorry.

1           A.     I don't know exactly. I'm not an expert  
2 on joint compounds.

3           MR. JOHNSON: Okay. Thank you, sir.

4                   CROSS-EXAMINATION

5 BY MR. ELLISTON:

6           Q.     Dr. Lemen, as you know, my name is Gary  
7 Elliston and I'm here on behalf of several  
8 companies.

9                   Would you agree, sir, that the U.S.  
10 Public Health Service has been in existence since  
11 1798?

12          A.     Yes, sir.

13          Q.     The U.S. Public Health Service recently  
14 celebrated their 200th anniversary, didn't they?

15          A.     Yes, sir.

16          Q.     How long were you a member of that  
17 organization?

18          A.     From 19 -- September of 1970 to March 1  
19 of 1996.

20          Q.     The Surgeon General is actually the head  
21 of the U.S. Public Health Service, isn't he?

22          A.     Yes.

23          Q.     He or she?

24          A.     He or she.

25          Q.     The United States Public Health Service

1 has studied asbestos and its potential health  
2 hazards since the 1930s, hasn't it?

3 A. That's correct.

4 Q. The U.S. Public Health Service bears  
5 responsibility for the health of a variety of  
6 people and organizations, including the Indian  
7 reservations, Merchant Marines, that type of thing,  
8 don't they?

9 A. They don't do the Merchant Marine  
10 anymore. That -- under President Reagan they took  
11 that responsibility away from us. But they do the  
12 federal prisons still and Indian reservations.

13 Q. The U.S. Public Health Service has  
14 addressed the potential hazards of asbestos and how  
15 to control those hazards since at least the 1930s,  
16 haven't they?

17 A. Yes, sir.

18 Q. The United States Government first issued  
19 any type of regulation and enforceable regulation  
20 concerning the exposure levels to asbestos in 1960,  
21 didn't they?

22 A. I think I now have information under the  
23 Walsh-Healey that they actually -- the first was  
24 1952. But it's in that same time period. I  
25 recently found some reference in the Walsh-Healey

1 Act to a 1952 mention. I could provide that to  
2 you. I don't have it with me.

3 Q. The first time the U.S. Government  
4 created or issued or published any type of warning  
5 to be used in the workplace or on products  
6 containing asbestos was in 1972, when OSHA  
7 regulations were created; correct?

8 MR. HAINES: Object to form.

9 THE WITNESS: Are you referring to  
10 the -- including in the 1972 criteria  
11 document that NIOSH put out to OSHA, or are  
12 you saying just for the OSHA standard? But  
13 '72 is correct, in either case.

14 Q. (By Mr. Elliston) Okay, sir. You  
15 actually participated on the committee that issued  
16 the 1972 criteria document for NIOSH, didn't you?

17 A. My role in that criteria document was not  
18 a decision-making role but one of putting together  
19 the tables that appeared in the appendix of the  
20 criteria document showing the technical feasibility  
21 of achieving the recommendation. But I did not  
22 have any role in making the decision what the  
23 standard was at that time.

24 Q. Were you a member of the committee?

25 A. I don't know that you'd call it -- I

1 wasn't a member of a committee. I was a worker  
2 that was told to put together and take all the  
3 information the Public Health Service had collected  
4 up to that point in time and put it in the tables  
5 that appeared in the back of that book. So if you  
6 call that a part of a committee, I guess yes, the  
7 answer is yes. But I wasn't -- it wasn't my  
8 decision at that time as to what the standard would  
9 be.

10 Q. Was Dr. Joseph Wagner one of the members  
11 of the group that had decision-making authority?

12 A. I think his name's in the criteria  
13 document as being there. I don't think my name  
14 appears in the criteria document as being on any  
15 committee. But I did work for Dr. Joseph Wagner at  
16 that time.

17 Q. Was Dr. Joseph Wagner one of the members  
18 who had decision-making authority for that 1972  
19 NIOSH criteria document?

20 A. I believe he was.

21 Q. Now, when NIOSH issues their criteria  
22 documents and makes recommendations to OSHA, those  
23 recommendations are based upon the best available  
24 science and what NIOSH believes is best for the  
25 workers from a health perspective, isn't it?

1 A. That's correct.

2 Q. In that 1972 criteria document there was  
3 a permissible exposure level recommended for  
4 asbestos exposure in the workplace, wasn't there?

5 A. Yes, sir.

6 Q. Would you agree, sir, that in 1972, that  
7 OSHA, NIOSH, the U.S. Public Health Service, they  
8 were all aware of the potential hazards of asbestos  
9 and how those hazards should be dealt with in the  
10 workplace?

11 A. All of the hazards of asbestos? I don't  
12 think in 1972 they were aware of everything they  
13 know today about asbestos, but I'm not sure I  
14 understand your question. I need a little  
15 clarification on it.

16 Q. In your opinion, sir, were NIOSH, OSHA  
17 and the U.S. Public Health Service aware of all the  
18 scientific data and medical research concerning  
19 asbestos hazards and how those hazards should be  
20 controlled in the workplace as of 1972?

21 A. I believe --

22 MR. HAINES: Object to form.

23 THE WITNESS: I believe they would  
24 have known or should have known.

25 Q. (By Mr. Elliston) In 1972, this warning

1 that was required by OSHA was required not only to  
2 be put on thermal insulation products but it was  
3 also required to be posted in the workplace  
4 wherever asbestos might be used, wasn't it?

5 A. I believe that's correct.

6 Q. In fact, the OSHA regulations are  
7 directed toward the employer of the individual  
8 worker, aren't they?

9 A. Yes, sir.

10 Q. Are you also aware, sir, that under the  
11 laws of the state of Texas since 1958, that  
12 exposure levels to asbestos were required to be  
13 kept below five million particles per cubic foot of  
14 air?

15 A. I have heard that. I have not seen that  
16 law, to the best of my knowledge.

17 Q. Have you been provided any industrial  
18 hygiene information or dust sampling results that  
19 would indicate that Mr. Raper was ever exposed to  
20 levels of asbestos above the TLV or PEL in  
21 existence at the time of that exposure?

22 A. No.

23 Q. Did you agree with the recommendations  
24 that were made in the 1972 criteria documents by  
25 NIOSH?

1 A. At that point in my career, yes, sir.

2 Q. Those were recommendations of exposure  
3 levels that you yourself would have been willing to  
4 work in or to have had your family work in, isn't  
5 that true?

6 A. At that time, yes.

7 Q. Would you agree, sir, that that group,  
8 that decision-making group from the 1972 criteria  
9 document, while addressing asbestosis, were also  
10 concerned about the potential cancer risk of  
11 workers in the workplace?

12 A. Yes, sir.

13 Q. Has anyone made you aware, sir, of  
14 Dr. Egleman's sworn testimony that the members of  
15 that committee weren't concerned or did not care  
16 whether workers developed cancer?

17 MR. HAINES: Object to the form.

18 THE WITNESS: I can't tell you what  
19 Dr. Egleman -- you know, what was in his  
20 mind, but I know what my opinion is.

21 Q. (By Mr. Elliston) And your opinion is  
22 that those individuals were very concerned about  
23 the health and safety of workers in the workplace,  
24 isn't it?

25 A. That they were concerned, yes.

1 Q. Have you reviewed any corporate documents  
2 or depositions with any corporate representatives  
3 from Armstrong World Industries or Armstrong Cork  
4 Company?

5 A. I don't recall having done that.

6 Q. Have you reviewed any documents or any  
7 depositions of any corporate representatives of the  
8 Ruberoid Company or GAF?

9 A. I don't recall doing that, no, sir.

10 Q. Have you reviewed any corporate documents  
11 or depositions of corporate representatives of the  
12 Dana Corporation?

13 A. I don't believe so.

14 Q. Have you reviewed any corporate documents  
15 or depositions of corporate representatives of  
16 Flexitallic?

17 A. I don't believe so.

18 Q. Have you reviewed any corporate documents  
19 or depositions of corporate representatives of  
20 Turner and Newell?

21 A. I don't believe so.

22 Q. Have you reviewed any corporate documents  
23 or depositions of corporate representatives of the  
24 CertainTeed Company?

25 A. I don't believe so.

1 Q. Have you reviewed any corporate documents  
2 or depositions of corporate representatives of the  
3 Riley Stoker Company?

4 A. I don't believe so.

5 Q. Have you reviewed any corporate documents  
6 or depositions of corporate representatives of 3M?

7 A. I don't believe so. I -- with the last  
8 question, 3M as relates to asbestos?

9 Q. Yes, sir.

10 A. No.

11 Q. Have you reviewed any corporate documents  
12 or depositions of corporate representatives of  
13 National Gypsum?

14 A. Corporate documents? I've been in a  
15 trial that dealt with National Gypsum, but I don't  
16 recall reviewing any of their corporate documents.

17 Q. Have you reviewed any depositions of any  
18 employee of National Gypsum, to your knowledge?

19 A. I don't believe so.

20 Q. Have you reviewed any corporate documents  
21 or depositions of corporate representatives of the  
22 U.S. Gypsum Company?

23 A. I don't believe so.

24 Q. Have you conducted or reviewed any  
25 studies on the fiber release of any products

1 manufactured by Armstrong World Industries or  
2 Armstrong Cork Company?

3 A. I don't believe so.

4 Q. Have you conducted or reviewed any  
5 studies on the fiber release of any product  
6 manufactured by the Ruberoid or GAF companies?

7 A. I don't believe so.

8 MR. HAINES: Gary, you can shorten it  
9 to one question and I won't object to being  
10 compound, if you want to.

11 MR. ELLISTON: I appreciate that, but  
12 at the time I need to examine him in the  
13 trial I expect all these companies will not  
14 be sitting there. Therefore, I'd rather  
15 separate them.

16 MR. HAINES: That's probably true.

17 (Recess taken.)

18 Q. (By Mr. Elliston) Sir, have you  
19 conducted or reviewed any studies on the fiber  
20 release of any product manufactured by CertainTeed?

21 A. Not to my knowledge.

22 Q. Have you conducted or reviewed any  
23 studies on the fiber release of any product  
24 manufactured by Riley Stoker?

25 A. Not to my knowledge.

1 Q. Have you conducted or reviewed any  
2 studies on fiber release of any product  
3 manufactured by T&N?

4 A. Not to my knowledge.

5 Q. By T&N I mean Turner & Newell.

6 A. Right.

7 Q. Have you conducted or reviewed any  
8 studies on the fiber release manufactured by  
9 Flexitallic?

10 A. Not to my knowledge.

11 Q. Have you conducted or reviewed any  
12 studies on the fiber release of any product  
13 manufactured by Dana?

14 A. Not to my knowledge.

15 Q. Have you conducted or reviewed any  
16 studies on the fiber release of any product  
17 manufactured by National Gypsum or U.S. Gypsum?

18 A. Not to my knowledge.

19 Q. Have you ever visited a facility that  
20 manufactured joint compound or wallboard?

21 A. I believe I have. But ask me which  
22 facility -- it would have been in the early '70s --  
23 I can't tell you.

24 Q. Have you ever visited or inspected a  
25 facility of the National Gypsum Company?

1           A.     I don't believe so, unless they were  
2 owned previously by another organization.

3           Q.     Have you ever visited or inspected a  
4 facility owned by the U.S. Gypsum Company?

5           A.     Again, my answer would be the same unless  
6 they were owned by a different name. I don't  
7 recall going into any.

8           Q.     Have you ever visited or inspected a  
9 facility operated by the Armstrong World Industries  
10 Company or Armstrong Cork Company?

11          A.     I don't believe so, unless they were  
12 owned by another company prior to that.

13          Q.     I think that company has gone by  
14 Armstrong Cork Company or Armstrong World  
15 Industries, Inc. since the late 1800s.

16          A.     I don't recall ever going in there.

17          Q.     Have you ever inspected or visited a  
18 facility owned or operated by Ruberoid or GAF?

19          A.     Not to my knowledge.

20          Q.     Have you ever been to any facility owned  
21 or operated by Flexitallic?

22          A.     Until today I never heard of Flexitallic.

23          Q.     That might eliminate a few additional  
24 questions.

25                 Have you reviewed -- I'm sorry. Have you

1 visited or inspected a facility owned by  
2 CertainTeed?

3 A. I may have. I can't remember which one.

4 Q. Have you visited or inspected any  
5 facility owned or operated by Riley Stoker?

6 A. No, not to my knowledge.

7 Q. Would you agree, sir, that you cannot  
8 testify to the state of mind, motivation or thought  
9 processes of any representative or employee of  
10 Armstrong World Industries or Armstrong Cork  
11 Company?

12 A. Yes.

13 Q. In fact, sir, regardless which company I  
14 put in the question, you can't testify to the state  
15 of mind, motivation or thought processes of any  
16 company representative or employee, can you?

17 A. Correct.

18 Q. Can you identify any manufacturer who was  
19 manufacturing ceiling tile that contained asbestos  
20 after 1985?

21 A. No, sir.

22 Q. Can you identify any company that was  
23 manufacturing joint compound that contained  
24 asbestos after 1985?

25 A. No, sir.

1 Q. You brought some literature today  
2 concerning friction products. Have you ever  
3 published or gathered literature on fiber release  
4 from floor tiles or flooring material?

5 A. Not to my knowledge.

6 Q. Have you ever published or gathered  
7 literature on fiber release from ceiling tiles?

8 A. I don't believe so.

9 Q. Have you ever published or gathered any  
10 literature on fiber release from gaskets?

11 A. I don't believe so.

12 Q. Have you ever published or gathered  
13 literature on fiber release from adhesives,  
14 sealants or coatings?

15 A. I don't believe so.

16 Q. Would you agree, sir, that gaskets,  
17 flooring materials, adhesives, sealants and  
18 coatings would all be classified as nonfriable  
19 products under the EPA?

20 A. Again, in answer to the earlier question,  
21 I don't know the exact definition, but I believe  
22 that that would be the case.

23 Q. Have you been provided any information  
24 that indicates that Mr. Raper ever encountered any  
25 warning signs in any of his workplaces after June

1 of 1972 that indicated there was asbestos being  
2 used in that workplace?

3 A. Other than what might be contained in the  
4 material that I gave, I'm not aware of any.

5 Q. And you're not aware of any from your  
6 review of that material, are you?

7 A. No.

8 Q. Would you also agree, sir, that under the  
9 OSHA regulations, that the employer was required to  
10 have the employee have a physical examination each  
11 year if they were being exposed to asbestos?

12 A. I'd have to go back to the regulation.  
13 And I think that's correct, but I don't know the --

14 Q. You would agree that under OSHA, any  
15 employee being exposed to asbestos was required to  
16 be medically monitored after 1972 by their  
17 employer, wouldn't you?

18 A. Yes, sir.

19 Q. You've not been given any information  
20 that Mr. Raper was medically monitored or required  
21 to have a physical examination each year after  
22 1972, have you?

23 A. No.

24 Q. In fact, sir, under OSHA, that if an  
25 employee was being exposed to asbestos above the

1 permissible exposure levels and engineering  
2 controls were not feasible, they were required to  
3 be given respiratory protection, weren't they?

4 A. Correct.

5 Q. And based on all you saw, Mr. Raper was  
6 never required by his employer to wear respiratory  
7 protection, was he?

8 A. I did not see that.

9 Q. Are you aware, sir, of any  
10 epidemiological study that has looked at the  
11 mortality or morbidity of flooring applicators or  
12 flooring mechanics?

13 A. No.

14 Q. Are you aware of any epidemiological  
15 study that has looked at the morbidity or mortality  
16 of workers who are using ceiling tiles or applying  
17 sealant material?

18 A. There have been studies that may have  
19 included those, but nothing specific to that  
20 particular job.

21 Q. Would you agree, sir, that the first  
22 epidemiological study that identified a risk of  
23 asbestos-related disease in workers working with or  
24 around joint compound was the study in the mid  
25 1970s, specifically 1975, by Dr. Selikoff's group?

1 A. I believe that's true, but I --

2 Q. Would you also agree, sir, that the first  
3 study that indicated that persons in the household  
4 of asbestos workers might be at risk of  
5 asbestos-related disease was a study, the  
6 Anderson-Lillis study of 1976?

7 MR. HAINES: Object to form.

8 THE WITNESS: I believe that was the  
9 first study.

10 Q. (By Mr. Elliston) Have you reviewed or  
11 conducted any studies on fiber release from  
12 automotive gaskets, meaning gaskets used in  
13 automotive combustion engines?

14 A. I don't believe so.

15 Q. As I understand it, sir, you've not had  
16 any communication with anyone concerning  
17 Mr. Raper's case other than Plaintiff's attorney;  
18 is that correct?

19 A. That's correct.

20 Q. In other words, you have not had any  
21 communication with any of the co-workers, his  
22 physicians or the families themselves; have you?

23 A. You mean directly talk to them?

24 Q. Yes.

25 A. No, sir.

1 Q. Based on the information you've been  
2 given, are you aware, sir, whether Mr. Raper was  
3 ever diagnosed with any non-malignant,  
4 asbestos-related disease such as asbestosis or  
5 asbestos-related pleural plaques prior to receiving  
6 his cancer diagnosis?

7 A. I don't know of any.

8 Q. Sir, would you agree that it has been  
9 your recommendation for the last quarter century  
10 that in-place asbestos products that are in good  
11 condition that have not been damaged should be left  
12 alone and left in place?

13 A. That has been my opinion. But monitored.

14 Q. When NIOSH was making recommendations to  
15 OSHA about the permissible exposure levels, those  
16 were levels that were being recommended for all  
17 types of asbestos-related diseases, including the  
18 cancers, weren't they?

19 A. I think the 1992 really didn't address  
20 the cancer issue to any extent. But all the rest  
21 of them, after that point in time, were, yes, sir.

22 MR. HAINES: You said '92.

23 THE WITNESS: I mean '72. I'm sorry.

24 Not '92, '72.

25 Q. (By Mr. Elliston) I'll see if I can

1 clear that up for both of us.

2 After the 1972 criteria document, each  
3 additional criteria documents, when there were  
4 recommended levels of exposure given to OSHA by  
5 NIOSH, those levels were to protect against all  
6 asbestos-related diseases, including the cancers,  
7 weren't they?

8 A. If you recall the 1976 criteria document  
9 that I and John Dement wrote for NIOSH, it said  
10 that the concentration we recommended, that being  
11 the 0.1, which is the current OSHA standard, was  
12 based upon technological feasibility and phase  
13 contrast microscopy to reduce the risk, but we  
14 could not guarantee it would eliminate the risk of  
15 cancer.

16 So the level was not based upon the  
17 health effect, it was based upon a technological  
18 feasibility of measuring at that concentration.

19 MR. ELLISTON: Objection, nonresponsive.

20 Q. (By Mr. Elliston) Isn't it true, sir,  
21 that when NIOSH made recommendations to OSHA  
22 concerning permissible exposure levels, those  
23 recommendations were made for all types of -- all  
24 types of asbestos-related disease, including the  
25 cancers?

1 MR. HAINES: Object to form.

2 THE WITNESS: Well, yes, they were,  
3 with that provision that I put on.

4 Q. (By Mr. Elliston) Well, you would agree,  
5 sir, that NIOSH didn't recommend different levels  
6 to protect against asbestosis and then a different  
7 level to protect against cancers?

8 A. If that's your question, that's correct.

9 Q. Would you also agree that in the 1940s  
10 and 1950s and 1960s, no doctor or scientist with  
11 U.S. Public Health Service ever recommended that  
12 asbestos not be used onboard government ships and  
13 aircraft because of any potential hazard?

14 A. I don't know the answer to that. I don't  
15 know if anybody did or did not, but I don't know of  
16 anybody doing it.

17 Q. You've never seen any evidence that  
18 anybody with U.S. Public Health Service ever spoke  
19 up and said, don't use asbestos onboard Naval ships  
20 or military aircraft, have you?

21 A. I don't know of any. The answer is no.

22 Q. Would you likewise agree, sir, that you  
23 cannot cite any textbook that was published in the  
24 30's, '40s, '50s or even the '60s that advocated  
25 banning asbestos?

1           A.     Well, I think Dr. Hueper's textbook,  
2     1942, certainly talked about the risk, but I don't  
3     think he ever said anything about banning the use  
4     of asbestos.

5           Q.     Therefore, you would agree, sir, you  
6     could not identify any textbook that advocated  
7     banning asbestos in the 1930s, 1940s, 1950s or  
8     1960s, can you?

9           A.     Not that I recall.

10          Q.     Can you identify any textbook that  
11     advocated banning asbestos in the 1970s?

12          A.     Well, I think that -- by your definition  
13     of textbook, would you include the annals of the  
14     New York Academy of Sciences in 1965 as a textbook?  
15     Because you kind of skipped over the '60s.

16          Q.     Well, let me go back to this for a  
17     second. Go back to your question for a second.

18                 I am specifically dealing with textbooks,  
19     and we'll talk about the annals in just a moment.

20          A.     Okay.

21          Q.     Which --

22          A.     A textbook, by your definition, is a  
23     textbook used for training people?

24          Q.     Correct.

25          A.     Okay.

1 Q. Are you aware of any textbook that  
2 advocated banning asbestos in the 1970s?

3 A. Not with -- not right now, no, I can't  
4 tell you anything.

5 Q. Did Mount Sinai, in their -- did Mount  
6 Sinai or the New York Academy, did they advocate  
7 banning asbestos in the 1960s or 1970s?

8 A. Well, in the discussion section, I think  
9 it was Mr. Roach representing industry, said that  
10 the only safe level that would protect all workers  
11 was zero, which I would say would be essentially  
12 the recommendation, not to use it, or ban it. So I  
13 don't think he used the word ban, but he said that  
14 was the only safe concentration.

15 Q. Did Dr. Selikoff himself ever publish the  
16 opinion that asbestos should not be used in  
17 industry in the 1960s, 1970s or 1980s?

18 A. I don't know that he did, no, sir.

19 Q. Did any member of the U.S. Public Health  
20 Service publish the opinion in the 1950s, 1960s or  
21 1970s that asbestos should not be used in industry?

22 A. Other than the statement in the criteria  
23 document that I alluded to before that you said was  
24 nonresponsive, I don't think so.

25 Q. Did NIOSH come out and issue the opinion

1 or recommendation that asbestos be banned from use  
2 in industry in the 1970s?

3 A. I think they recommended substitution  
4 when possible, but never an outright statement of  
5 banned.

6 Q. It has been the opinion and the  
7 recommendation of the U.S. Public Health Service  
8 from the 1930s right up through the 1970s that you  
9 should control the dust levels, and by controlling  
10 the dust levels, control disease, when dealing with  
11 asbestos, hasn't it?

12 A. Reduce the risk of disease, yes, sir.

13 Q. Sir, since you retired from NIOSH, would  
14 you estimate that you have testified, either in  
15 deposition or trial, approximately 50 times?

16 A. That's probably correct.

17 Q. Would you agree, sir, that at this point  
18 in time approximately 60 to 75 percent of your  
19 income comes from litigation?

20 A. I would guess that would be correct.

21 Q. When you went through the material for  
22 this case, did you make any notes yourself?

23 A. No, sir.

24 Q. Would you agree, sir, that an individual  
25 just looking at dust can't tell whether that dust

1 contains asbestos or not?

2 A. I agree with you.

3 Q. You have to look at the dust or the  
4 particles under a microscope to determine whether  
5 they're asbestos or not, don't you?

6 A. That's correct.

7 Q. Would you also agree, sir, that the first  
8 large-scale epidemiological study about asbestos  
9 was done by Dr. Merewether in 1930 over in England  
10 on textile workers?

11 A. I certainly think that's the biggest of  
12 the first studies done, yes, sir.

13 Q. And, again, Dr. Merewether was dealing  
14 with textile workers who were working with raw  
15 asbestos in poorly-ventilated plants rather than in  
16 end-product users, wasn't he?

17 A. That's correct.

18 Q. And, of course, what Dr. Merewether  
19 recommended was that you suppress the dust levels  
20 and control the disease, wasn't it?

21 A. Yes, sir.

22 Q. And at that study Dr. Merewether did not  
23 identify any mesotheliomas, did he?

24 A. Not to my knowledge.

25 Q. In fact, Dr. Merewether did not report

1 any cancers in that study, did he?

2 A. That's correct.

3 Q. Sir, I've heard you mention Dr. Hoffman  
4 or Mr. Hofman's report before, and I want to just  
5 ask you a few questions about that.

6 The Hoffman report of 1918, that was a  
7 governmental document, wasn't it?

8 A. That was from the -- I believe the Bureau  
9 of Labor Statistics, by the Department of Labor.

10 Q. And that document referred to asbestos  
11 workers but did not refer to end-product users, did  
12 it?

13 A. I don't believe it did.

14 Q. So that document would take  
15 U.S. Government's knowledge about asbestos at least  
16 back to 1918, wouldn't it?

17 A. I believe so. At least the Department of  
18 Labor, that part of the government.

19 Q. Now, if we go to 1935, we have  
20 Dr. Lanza's study, which was the first large-scale  
21 epidemiological study of the United States, wasn't  
22 it?

23 A. The one when he was with Metropolitan?

24 Q. 1935.

25 A. Yes, I think so.

1 Q. Is that correct?

2 A. I said yes.

3 Q. Okay.

4 A. I think so.

5 Q. Dr. Lanza's 1935 study in the U.S.,  
6 again, was dealing with textile workers who were,  
7 for all practical purposes, working with pure  
8 asbestos dust in factories, wasn't it?

9 A. That's correct.

10 Q. And Dr. Lanza, again, recommended that  
11 you suppress the dust and control disease?

12 A. I believe that's correct.

13 Q. And then, in 1938, U.S. Public Health  
14 Service, with Dr. Dreessen, does a study of  
15 asbestos textile workers?

16 A. That's when the study was reported.

17 Q. And Dr. Dreessen did not report any  
18 mesotheliomas, did he?

19 A. No, sir.

20 Q. Dr. Lanza did not report any  
21 mesotheliomas?

22 A. Correct.

23 Q. And Dr. Dreessen went beyond just the  
24 standard recommendation that you should suppress  
25 the dust and control disease, he went a step

1 further and recommended a tentative threshold limit  
2 value, didn't he?

3 A. It wasn't called a threshold limit value  
4 at that time, it was just a guidance limit, I think  
5 he called it.

6 Q. What Dr. Dreessen said in his 1938 study  
7 was that if you kept the dust levels below five  
8 million particles per cubic foot, that you would  
9 expect almost the total disappearance of disease,  
10 didn't he?

11 A. The disease asbestosis, yes, sir. He did  
12 report some cases below that concentration, but  
13 that's essentially what his conclusion was.

14 Q. And, again, this Dr. Dreessen's study was  
15 reported on textile workers and it was reported in  
16 a U.S. Government publication under the seal of the  
17 U.S. Surgeon General, wasn't it?

18 A. Well, I don't know if it was under the  
19 seal. I've never heard it put that way. But it  
20 was a U.S. Government publication of the Public  
21 Health Service.

22 Q. And the Surgeon General was in charge and  
23 the head of the U.S. Public Health Services; is  
24 that correct?

25 A. Yes, that's correct.

1 Q. Then in 1946 we have the first  
2 large-scale epidemiological study concerning pipe  
3 covers or people working with thermal insulation  
4 products in the United States, don't we?

5 A. Are you referring to the Fleischer study?

6 Q. Yes, sir.

7 A. Yes, sir.

8 Q. And the Fleischer-Drinker study, again,  
9 was a study conducted by the U.S. Navy and the  
10 U.S. Maritime Commission, wasn't it?

11 A. I believe that's correct.

12 Q. In the Fleischer-Drinker study, did they  
13 report any mesotheliomas?

14 A. No, sir.

15 Q. Did the Fleischer-Drinker study report  
16 any lung cancers or malignancies of any type that  
17 they associated with asbestos?

18 A. I don't believe so.

19 Q. In your opinion, sir, is cigarette smoke  
20 fibrogenic?

21 A. Fibrogenic?

22 Q. Yes, sir.

23 A. It can cause -- I'm not sure that I can  
24 answer that question, whether it's fibrogenic or  
25 not.

1 Q. Let me rephrase the question for you.  
2 Would you agree, sir, that cigarette smoke causes a  
3 fibrotic reaction in the lungs?

4 A. It can.

5 Q. Would you agree, sir, that interstitial  
6 fibrosis progresses more rapidly in a smoker than a  
7 nonsmoker?

8 MR. HAINES: Object to form.

9 THE WITNESS: I believe that would be  
10 true.

11 Q. (By Mr. Elliston) In fact, the  
12 epidemiological studies by Dr. Selikoff, published  
13 in the 1960s and 1970s, indicate that asbestosis  
14 tends to progress more rapidly and become more  
15 severe in smokers than nonsmokers, doesn't it?

16 A. I believe that's correct.

17 Q. Would you also agree, sir, that the risk  
18 of GI-tract cancer in asbestos workers has not been  
19 shown to be any greater than the general population  
20 if they are non-smokers?

21 A. I can't answer that question.

22 Q. You would agree, sir, that at least for  
23 laryngeal cancers, there has been no showing of an  
24 excess risk of laryngeal cancer among asbestos  
25 workers unless they are a smoker, wouldn't you?

1 A. I believe that's correct.

2 Q. Would you also agree, sir, that the  
3 average latency period for mesothelioma is 35  
4 years?

5 A. Somewhere in that neighborhood.

6 Q. Would you also agree, sir, that the  
7 average latency period for lung cancer, if it is  
8 related to asbestos, is in the range of 20 to 25  
9 years?

10 A. I would think that would be correct. In  
11 both of those, you're saying, average?

12 Q. Yes, sir, I am.

13 A. Okay. I agree with you.

14 Q. What is your opinion, sir, for the  
15 average latency period for asbestosis?

16 A. That depends upon the dosage.

17 Q. Would you agree, sir, that the more  
18 severe the dose or the exposure, the more rapid or  
19 shorter the latency period?

20 A. The higher the exposure or the  
21 concentration to the individual, the shorter the  
22 latency period.

23 Q. Would you agree, sir, that throughout the  
24 research and development of knowledge about  
25 asbestos and its potential relationship or

1 association with lung cancer, there has been a  
2 debate whether interstitial fibrosis or asbestosis  
3 is necessary before there is an increased risk of  
4 lung cancer in an asbestos-exposed individual?

5 A. That is correct.

6 Q. Would you also agree, sir, that if we  
7 followed Dr. Selikoff's epidemiological research  
8 back to 1968, when he first divided his workers  
9 between smokers and nonsmokers, that all the way up  
10 until 1979 Dr. Selikoff basically reported that  
11 nonsmoking asbestos workers did not have an  
12 increased risk of lung cancer above the general  
13 population?

14 A. Give me the dates again. I'm not --

15 Q. Okay.

16 A. You're saying '79.

17 Q. I apologize. I'm getting too  
18 shorthanded, trying to shorthand this.

19 Would you agree, sir, that up until 1979,  
20 throughout all of Dr. Selikoff's publications on  
21 his research, Dr. Selikoff indicated that a  
22 nonsmoking asbestos worker did not have an  
23 increased risk of lung cancer above the general  
24 population?

25 A. Could you just tell me what publication

1 in '79 you're referring to? Because I'm having --  
2 that Selikoff stated that in? I'm trying to figure  
3 out when --

4 MR. HAINES: He's asking you about  
5 all the publications prior to '79. Whether  
6 he said that or not --

7 Q. (By Mr. Elliston) Let me approach it  
8 this way, Dr. Lemen. You would agree that in 1964  
9 and '65 Dr. Selikoff did not divide those  
10 insulation workers between smokers and nonsmokers,  
11 did he?

12 A. Well, he wrote a paper -- before '65?

13 Q. Yes. Stay with me for just a second.

14 A. Correct.

15 Q. I know you're trying to read, and I'm  
16 going to try to break it out for us so we can get  
17 there.

18 Would you agree, sir, that in his -- at  
19 the symposium and in the annals that were published  
20 after the symposium, that Dr. Selikoff did not  
21 distinguish between smokers and nonsmokers in his  
22 cohort of insulators?

23 A. I believe that's correct.

24 Q. In 1968 Dr. Selikoff did divide the  
25 workers between smokers and nonsmokers and

1 published the opinion that the nonsmokers did not  
2 have an excess risk of lung cancer above the  
3 general population?

4 A. I believe that was his finding.

5 Q. In 1972 he went to France, to an IARC  
6 meeting, and again reported that nonsmokers  
7 basically did not have an increased risk of lung  
8 cancer over the general population, even though  
9 they had been exposed to asbestos, didn't he?

10 A. I believe that -- you're talking about  
11 his publication and the biological effects of --  
12 yes, sir.

13 Q. Then in 1976 he again presented his data  
14 at the New York Academy of Science meeting and  
15 again indicated that nonsmoking asbestos workers  
16 did not have an increased risk of lung cancer above  
17 the general population, didn't he?

18 A. I'd have to go back to his paper, but  
19 that's generally my recollection.

20 Q. In any event, in 1979 Dr. Selikoff did  
21 publish a paper indicating that, in his opinion,  
22 that there was an increased risk of lung cancer  
23 among nonsmoking asbestos workers that could be  
24 somewhere between 1 and 9 and, therefore, they  
25 selected 5 and published that as the increased risk

1 for a nonsmoking asbestos worker; isn't that true?

2 A. What was the name of that paper? Can you  
3 tell me which one?

4 Q. I can't give you the title of the paper,  
5 but it's my recollection, sir, that it was  
6 published in the annals that were published that  
7 year, the 1979 annals. I'd have to go back and  
8 look. But the figure of 5 is certainly what he  
9 reported. But I'm not sure of the exact era that  
10 that was reported.

11 Would you agree, sir, that in the paper  
12 where they reported the five times increased risk  
13 for nonsmoking asbestos workers, they also  
14 indicated that the risk, in actuality, could be  
15 anywhere between 1 and 9 because there were so few  
16 nonsmoking asbestos workers who had developed lung  
17 cancer?

18 A. I think that's true.

19 Q. In your opinion, sir, is there any safe  
20 level or is there any known safe level to any  
21 carcinogen?

22 A. To any carcinogen?

23 Q. Yes, sir.

24 A. Well, we certainly put recommendations in  
25 our criteria documents, RELs, recommended exposure

1 limits. And there possibly are safe levels, but I  
2 can't quantify them for you.

3 Q. Fair enough. Let me rephrase my question  
4 for you.

5 Would you agree, sir, that medical  
6 science today cannot identify a safe level for any  
7 carcinogen?

8 A. For all individuals I believe that's  
9 true. Because of the -- there are many factors  
10 that go into an individual's susceptibility, et  
11 cetera, so I believe I would have to answer your  
12 question yes.

13 Q. In using that criteria, there is no known  
14 safe level to automobile exhaust that we encounter  
15 every day, is there?

16 A. Not for all individuals, that's correct.

17 Q. You would also agree, sir, there's no  
18 safe level to -- of exposure to cigarette smoke,  
19 whether direct or indirect, isn't that true?

20 A. Yes.

21 Q. Sir, isn't it true that whether dust is  
22 actually visible to the individual depends on a lot  
23 of things, including the light in the area, how  
24 large the particles are and what type of particles  
25 they are, things of that nature?

1 A. I would agree with that.

2 Q. Would you also agree, sir, that the  
3 exposure that an individual receives from dust will  
4 depend a lot on the wind or the ventilation in that  
5 area?

6 A. Those all have effects, yes, sir.

7 Q. And would you agree, sir, as to whether  
8 someone truly has an exposure above the threshold  
9 level or permissible exposure level will depend not  
10 just on how much dust they see but, in addition to  
11 how long they're in the area, how close they are to  
12 the operation, ventilation, things of that nature?

13 A. I would agree.

14 Q. Sir, have you published any opinions or  
15 criticisms of the filter, the fit, the marketing,  
16 the design or the manufacture of any type of  
17 respiratory protective device or mask?

18 A. I have not personally published. I have  
19 worked on respirator test programs and so forth in  
20 NIOSH recommendations, but they are not my  
21 publications, they're NIOSH publications.

22 Q. Have you published any opinions or  
23 criticisms of any specific brand or type of  
24 respirator or mask yourself?

25 A. Again, not personally, no, sir.

1 Q. Do you claim to be an expert in the  
2 manufacture, design or marketing of respiratory  
3 protective devices?

4 A. No, sir.

5 MR. ELLISTON: Why don't we take a  
6 quick break.

7 (Recess taken.)

8 Q. (By Mr. Elliston) Sir, what is your best  
9 estimate of your total income in 1998 from your  
10 work testifying and consulting in the asbestos  
11 litigation?

12 A. Just as pertains to asbestos?

13 Q. Yes, sir.

14 A. I'd have to go to my accountant, but I  
15 think that I -- after expenses and paying taxes  
16 and -- is that -- what are you talking about, gross  
17 or --

18 Q. Yes, sir. Let's -- I don't want to get  
19 into all your expenses. What was your gross  
20 income, your best estimate, from consulting and  
21 testifying in asbestos litigation in 1998?

22 A. A little over \$100,000.

23 Q. Sir, I noticed in your designation there  
24 was a mention of smoking. Would you agree that  
25 smoking causes 30 to 35 percent of all cancer in

1 America, cancer deaths in America?

2 A. I think it's the biggest cause of cancer  
3 deaths in the United States. I don't want to put a  
4 percentage on it because I'm not sure.

5 Q. Are you aware, sir, whether the  
6 U.S. Surgeon General has estimated that smoking  
7 causes over 30 percent of all cancer deaths in  
8 America?

9 A. I agree with that. I'm just not wanting  
10 to put a finite number. But I certainly think that  
11 smoking is the greatest cause of lung cancer in the  
12 world, probably.

13 Q. Okay. You've answered a little  
14 differently than I asked. So, in fairness to you,  
15 I'll divide it up. Would you agree that smoking  
16 has been shown to be a cause of 87 percent or more  
17 of all lung cancer deaths?

18 A. I would agree with that.

19 Q. Would you agree that smoking has been  
20 shown to be a cause of 30 percent or more of all  
21 cancer deaths in America?

22 A. Again, I can't answer that exactly, but I  
23 think that's somewhere in the neighborhood. I'd  
24 have to go back to the Surgeon General's report and  
25 do that.

1 Q. I'm sorry. Would you agree, sir, that  
2 the U.S. Surgeon General reports that tobacco smoke  
3 contains 43 different carcinogens?

4 A. Somewhere in that neighborhood. I'd have  
5 to go back and look at the Surgeon General's  
6 report, which I have a copy of. But it contains  
7 multiple carcinogens. And if 43 is the number,  
8 I'll take your word for it.

9 Q. Would you agree, sir, that the  
10 U.S. Public Health Service recommended warnings on  
11 tobacco products in the mid '60s?

12 A. I believe that's correct.

13 Q. Have you ever drafted or prepared a  
14 warning or instruction or label for any type of  
15 product that was actually placed in the stream of  
16 customers?

17 A. When I was director of the Division of  
18 Standards Development and Technology Transfer. And  
19 when I co-wrote the criteria document that John  
20 Dement and I did in 1976, we had -- well, we didn't  
21 include it there, but I worked on the 1972  
22 recommendation. And then all the criteria  
23 documents under my supervision that were put out  
24 between 1981 and of 1987 that contained warning  
25 labels, yes, I had a hand in writing those.

1 Q. Let me divide this up for us.

2 Have you, as an individual and private  
3 citizen, ever drafted or prepared a warning  
4 instruction or label for any type of product that  
5 was placed in the stream of customers?

6 A. No.

7 Q. Even while you were at NIOSH, did NIOSH  
8 ever recommend any instructions or labels for any  
9 individual products?

10 A. You mean like, for example, Armstrong  
11 ceiling tile? Would that be an example of a  
12 specific product?

13 Q. Yes, sir, it would.

14 A. Ours were generic recommendations, so the  
15 answer would be no.

16 Q. Did NIOSH -- I understand NIOSH  
17 recommended warnings be placed on certain types of  
18 products; is that correct?

19 A. That's correct.

20 Q. Did NIOSH go further than that and  
21 recommend labeling or instructions for various  
22 products?

23 A. They gave generic label instructions in  
24 their criteria documents. I don't think we, when I  
25 was at NIOSH, we ever made a specific label for a

1 specific product, if that's what you're asking.

2 MR. ELLISTON: I'll pass the witness.

3 Thank you, sir.

4 MS. SIENI: No questions.

5 CROSS-EXAMINATION

6 BY MR. BAHR:

7 Q. Doctor, my name is Kevin Bahr. I  
8 represent Kelly Moore.

9 Based on your review of the materials  
10 furnished to you by the plaintiffs' attorneys in  
11 this case, are you aware of the nature and  
12 circumstances surrounding plaintiffs' alleged  
13 exposure to joint compounds?

14 A. Other than the material that I was given?

15 Q. Correct.

16 A. No.

17 Q. Can you tell us what your awareness is  
18 regarding plaintiff's exposure to joint compounds  
19 based on what you have reviewed?

20 A. Just that he was exposed, but I don't  
21 know concentrations or anything of that nature.

22 Q. Have you reviewed any materials or  
23 documents or depositions of corporate  
24 representatives concerning anything related to  
25 Kelly Moore?

1 A. Not to my knowledge.

2 Q. You personally haven't conducted or  
3 reviewed any industrial hygiene studies regarding  
4 any fiber release issues concerning products  
5 manufactured by Kelly Moore?

6 A. No.

7 MR. BAHR: Those are all my  
8 questions. Thank you.

9 MR. HAINES: Did you have some  
10 questions?

11 MR. HARTON: Well, actually, what  
12 I've done, just so you'll know, is I've  
13 sent the notebook down to be copied. If I  
14 can get the notebook back up, that way I  
15 will have a copy, I can just use that at  
16 trial. And that's going to make it a lot  
17 easier than me running back through those  
18 articles, if that's all right. And that's  
19 what I've done. Therefore, about the only  
20 thing I've got is I've asked people to  
21 make -- find a copy of the Brachmann  
22 article. Remember that? And if you want a  
23 copy of this, I'll make it for you. But I  
24 think earlier we said -- believed it to be  
25 a manufacturing facility. I think the

1 first paragraph shows that, yeah, it was a  
2 brake manufacturing plant as opposed to end  
3 users. That's the 19 --

4 THE WITNESS: Yeah, that's consistent  
5 with what I remember. I would like to have  
6 a copy because -- I'm sure I've got one,  
7 but it would be easier if I could -- since  
8 I've given you copies.

9 MR. HARTON: And I think that's  
10 all -- yeah, yeah. I mean, those are all  
11 the questions I have. I don't know if  
12 anyone has anything else.

13 MR. HAINES: I've just got a couple  
14 of follow-ups if you all are all done.

15 DIRECT EXAMINATION

16 BY MR. HAINES:

17 Q. Dr. Lemen, I want to clear up a couple of  
18 points, make sure we're clear on. Earlier today we  
19 were talking about the criteria document in 1972  
20 and in '76, and you were attempting to explain one  
21 of your answers about technological feasibility and  
22 the levels. Please explain to me what happened in  
23 1976 with regard to technological feasibility and  
24 the standard that was recommended in that criteria  
25 document.

1           A.       The standard that was recommended in the  
2       1976 criteria document was based upon the  
3       statistical abilities of the NIOSH analytical  
4       method for counting fibers in an environment -- in  
5       an environment containing asbestos and the ability  
6       to statistically have a reliable concentration that  
7       you could rely upon. And the lowest concentration  
8       at that time that we could determine was 0.1  
9       fibers. And we stated that even at that  
10      concentration there may be disease, which we know  
11      now from doing risk assessment we project that  
12      there is a risk of developing disease at or below  
13      the concentration.

14           Q.       In 1972 or in 1976, was it ever thought,  
15      by the NIOSH or by yourself in your capacity  
16      working for NIOSH, that that level of .1 would  
17      entirely prevent cancer from arising from asbestos  
18      exposure?

19           MR. ELLISTON: Objection, form.

20           THE WITNESS: Well, the .1 didn't  
21      come into existence until 1976, and it  
22      wasn't after that period of time, that's  
23      true.

24           Q.       (By Mr. Haines) I'm sorry. It wasn't  
25      after what time?

1           A.       .1 was first recommended by NIOSH in  
2       1976, and subsequent to that and at that time it  
3       was never stated that it would completely reduce  
4       the risk, but it would substantially lower the  
5       risk, in our opinion.

6           Q.       Right. With regard to some of these  
7       articles that discuss the manufacturing of brake  
8       parts, such as this Brachmann article in 1940 which  
9       discusses grinders and drillers of brake bands, can  
10      you discuss for us why that would be relevant or  
11      applicable to end users? What is the significance  
12      of an article like this in the context of an end  
13      user brake mechanic?

14           MR. ELLISTON: Object, form.

15           THE WITNESS: I believe that it shows  
16      that when working with the brake lining,  
17      drilling holes in it or grinding it, that  
18      there could be exposure. So that's  
19      strictly applicable if somebody were  
20      grinding or drilling as an end-product user  
21      of the material.

22           MR. HAINES: That's all the questions  
23      I have for you. Thank you.

24           MR. HARTON: One. I'm following up  
25      on that.

## 1                    RECROSS-EXAMINATION

2        BY MR. HARTON:

3            Q.        Do you know, based on your review of the  
4        Raper testimony, if he ever either ground or  
5        drilled any brake linings?

6            A.        I don't know.

7            MR. HARTON:    Okay, thanks.

8            MR. FALK:    I just have one follow-up  
9        also.

## 10                   RECROSS-EXAMINATION

11        BY MR. FALK:

12           Q.        Are you aware of any studies or  
13        industrial hygiene surveys concerning exposure  
14        levels while working on aircraft brakes?

15           A.        I haven't seen any.

16           Q.        Do you know if the brakes on the aircraft  
17        that Mr. Raper worked on even contained asbestos?

18           A.        No, I don't know that.

19           MR. FALK:    Thank you.

20           MR. ELLISTON:   One last question.

## 21                   RECROSS-EXAMINATION

22        BY MR. ELLISTON:

23           Q.        Sir, are you aware of any fiber release  
24        studies or testing that has been done related to  
25        friction products used on cranes, overhead cranes?

1           A.       There may be some, but I'm not aware of  
2       them.

3                   MR. ELLISTON:   That's all I have.

4       Thank you.

5                   (Deposition concluded at 11:50 a.m.)  
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INDEX TO EXAMINATIONS

| <u>Examination</u>                  | <u>Page</u> |
|-------------------------------------|-------------|
| Cross-Examination by Mr. Harton     | 5           |
| Cross-Examination by Mr. Falk       | 50          |
| Cross-Examination by Mr. Gustafson  | 67          |
| Cross-Examination by Mr. Johnson    | 70          |
| Cross-Examination by Mr. Elliston   | 74          |
| Cross-Examination by Mr. Bahr       | 114         |
| Direct Examination by Mr. Haines    | 116         |
| Recross-Examination by Mr. Harton   | 119         |
| Recross-Examination by Mr. Falk     | 119         |
| Recross-Examination by Mr. Elliston | 120         |

- - -

INDEX TO EXHIBITS

| <u>Defendant's<br/>Exhibit</u> | <u>Description</u>                                             | <u>Page</u> |
|--------------------------------|----------------------------------------------------------------|-------------|
| 1                              | Notice of Taking Deposition                                    | 5           |
| 2                              | CV                                                             | 7           |
| 3                              | Medical File on Kenneth Raper                                  | 8           |
| 4                              | Time Line                                                      | 15          |
| 5                              | Medical Reports and Depositions of<br>Mr. Raper and Co-Workers | 15          |

(Original Exhibits 1 - 3 and 5 and photocopies  
of Exhibit 4 have been attached to the original  
transcript.

1 STATE OF GEORGIA:  
2 COUNTY OF FULTON:

3 I hereby certify that the foregoing transcript  
4 was reported, as stated in the caption, and the  
5 questions and answers thereto were reduced to  
6 typewriting under my direction; that the foregoing  
7 pages 1-123 represent a true, complete, and correct  
8 transcript of the evidence given upon said hearing,  
9 and I further certify that I am not of kin or  
10 counsel to the parties in the case; am not in the  
11 employ of counsel for any of said parties; nor am I  
12 in anywise interested in the result of said case.

13 Disclosure Pursuant to O.C.G.A. 9-11-28(d): The  
14 party taking this deposition will receive the  
15 original and one copy based on our standard and  
16 customary per page charges. Copies to other  
17 parties will be furnished based on our standard and  
18 customary per page charges. Incidental direct  
19 expenses of production may be added to either party  
20 where applicable. Our customary appearance fee  
21 will be charged to the party taking this  
22 deposition.

23 This, the 18th day of March, 1999.

24 *Diane M. Bachus*

25 Diane M. Bachus, RPR, CCR #B-2089  
My Commission Expires on the  
16th Day of August, 2002

