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SUPERIOR COURT OF WASHINGTON
FOR KING COUNTY

JODY E. RATCLIFF,)	
)	
Plaintiff,)	
)	
v.)	No. 16-2-18128-7
)	SEA
BORGWARNER MORSE TEC)	
LLC, et al.,)	
)	
Defendants.)	

WEDNESDAY, JANUARY 31, 2018

- - -

Videotaped Discovery Deposition of Frederick Pooley, Ph.D., held at the offices of Orrick, Herrington & Sutcliffe LLP, 51 West 52nd Street, New York, New York, commencing at 9:33 a.m., on the above date, before Carrie A. Campbell, Registered Diplomate Reporter, Certified Realtime Reporter, Illinois, California & Texas Certified Shorthand Reporter, Missouri & Kansas Certified Court Reporter.

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Page 4

1 INDEX

2 Page

3 APPEARANCES..... 2

4 EXAMINATIONS

5 BY MR. LANIER..... 5

6

7 EXHIBITS

8 No. Description Page

9 1 Lanier handwritten notes 40
(Exhibits attached to the deposition.)

10

11

12 CERTIFICATE..... 48

13 ACKNOWLEDGMENT OF DEPONENT..... 50

14 ERRATA..... 51

15 LAWYER'S NOTES..... 52

16

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12 Golkow Litigation Services
13 ---
14
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21
22
23
24
25

Page 5

1 VIDEOGRAPHER: All right. We
2 are now on the record. My name is
3 Henry Marte. I'm a videographer for
4 Golkow Litigation Services.
5 Today's date is January 31,
6 2018, and the time is 9:33 a.m. This
7 videotaped deposition is being held at
8 51 West 52nd Street, New York, New
9 York, in the matter of Ratcliff versus
10 Borgwarner Morse Tec, LLC. The
11 deponent today is Dr. Fred Pooley.
12 All appearances will be noted
13 on the stenographic record.
14 Will the court reporter please
15 administer the oath to the witness.
16
17
18
19
20
21
22
23
24
25

FREDERICK POOLEY, Ph.D.,
of lawful age, having been first duly sworn
to tell the truth, the whole truth and
nothing but the truth, deposes and says on
behalf of the Plaintiff, as follows:

DIRECT EXAMINATION
QUESTIONS BY MR. LANIER:
Q. Can you give us your name,

Page 6	Page 8
1 please?	1 you forgot this one. Okay. Just to the best
2 A. Frederick David Pooley.	2 of your memory.
3 Q. All right. And do you still	3 A. My first trial in the US was --
4 live in Wales?	4 I represented the government, I reckon. The
5 A. Yeah.	5 judge -- the courts. So --
6 Q. Cardiff?	6 Q. Yeah.
7 A. Yes.	7 That's the only time you've
8 Q. You know the TARDIS lands there	8 done that as a court witness, right?
9 a bunch. Have you ever noticed that?	9 A. Yes.
10 A. The --	10 Q. In the US?
11 Q. You're not a Doctor Who fan,	11 A. Yeah.
12 are you?	12 Q. Yeah.
13 A. Yes. There's a studio in	13 Nobody used you again after
14 Cardiff, yeah, manufacture.	14 that, did they?
15 Q. Yeah.	15 A. Nope.
16 All right. We've got a whole	16 Q. Go ahead.
17 bunch of people in here. Man, I've got like	17 What else?
18 a boatload. I think we could start military	18 A. Johns Manville. A lot of small
19 conflict with as many as we've got. They're	19 companies. Eagle-Picher. All cases relating
20 mainly here to watch Peter Bicks, but they	20 basically to use of crocidolite in products.
21 also wanted to meet you. So thank you for	21 Q. Yeah, you were big on saying
22 your time to give your deposition today.	22 that chrysotile didn't cause meso, weren't
23 Okay?	23 you?
24 A. No problem.	24 A. Yes, I believe it's not a very
25 Q. My name is Mark Lanier. I'm	25 important mineral as far as the cause of
Page 7	Page 9
1 going to ask you a set of questions today	1 mesothelioma.
2 that just are to try and get me some	2 Q. Yeah. Now just -- yeah, well,
3 information because tomorrow we're going to	3 we'll get into that more tomorrow.
4 take a trial deposition of you. Mr. Bicks	4 Any other clients stand out in
5 will go first tomorrow and do his direct, and	5 your mind?
6 then I'll cross examine you tomorrow. So	6 Any more you can remember?
7 tomorrow is the more intense day.	7 A. Well, there are clients in a
8 A. Okay.	8 sense who I represented in a legal sense, you
9 Q. Okay? Today is just like pfft.	9 know, in court or depositions, but I have --
10 Okay. These are easy. These are, I'd say	10 I perform a lot of investigations,
11 softballs, but you-all don't play that in	11 consultancy via law firms, you know, tissue
12 England, do you?	12 specimens and, et cetera, lung fiber burdens,
13 A. No.	13 and I never know who their client is in those
14 Q. All right. How many years have	14 situations.
15 you been testifying now?	15 Q. Okay. Have you done work with
16 A. 50, approximately.	16 Dennis Paustenbach before?
17 Q. How much money do you think	17 A. Not that I can remember, no.
18 you've made over those 50 years?	18 Q. Exponent?
19 A. I probably averaged about	19 A. Exponent?
20 \$20,000 a year.	20 Q. Yeah. It's a company that does
21 Q. And can you give me to the best	21 litigations, support litigation services.
22 of your memory a list of the clients you've	22 A. No.
23 worked for?	23 Q. How long have you worked for
24 And I know that's taxing, and	24 Johnson & Johnson?
25 I'm not going to get you tomorrow with, ah,	25 A. Oh, I consulted with them over

Page 10	Page 12
<p>1 the five, six-year period in the 1970s. 2 Q. And how would you describe your 3 jobs or job with Johnson & Johnson, what your 4 task was, what you did? 5 A. I was a consultant to them 6 based upon the mineralogy of their talc 7 product. 8 Q. Who did you report to? 9 A. There were -- it was to their 10 main lab in New Brunswick, and there were 11 about five or six individuals there who I 12 communicated with. 13 Q. Can you remember any of their 14 names? 15 A. Yeah. One called Tom Shelley, 16 Goudie. 17 Q. I'm sorry, that last name was? 18 A. Goudie, G-o-u-d-i-e. 19 Hildick-Smith. 20 Q. Can you spell that? 21 We've got a court reporter. 22 Her name is Carrie Campbell. She's probably 23 the best in the entire world, but she doesn't 24 know how to spell this stuff, and she's going 25 to spend an hour looking it up if we don't do</p>	<p>1 asbestos work from roughly about 19 -- 1996 2 onwards. 3 Q. You said '96. You meant '66? 4 A. '66, sorry. 5 Q. Not a problem. Peter and I 6 both jumped in on that one. 7 So do you remember who showed 8 up at your doorstep? 9 A. Yes. It was this gent Rolle 10 from their analytical lab in New Brunswick. 11 Q. All right. And had he warned 12 you he was coming, or was it a cold call? 13 A. No, it was a call, you know, to 14 see was I in such-such, do you mind if he 15 came along. And he discussed... 16 Q. And the task that he gave you 17 was to examine what? 18 A. He just wanted to know what the 19 samples contained. 20 Q. Did he bring the samples with 21 him? 22 A. Yes, he brought I think two 23 samples at the time. I can't remember the 24 exact -- but it was a sample anyway. 25 Q. And how did you figure out what</p>
Page 11	Page 13
<p>1 it for her now. 2 So how do we spell that last 3 name? 4 A. Hildick, H-i-l-d-i-c-k, 5 Hildick-Smith. 6 Q. All right. Anybody else you 7 can remember? 8 A. There were a few people in a 9 lab there that I sort of have contact with, a 10 gent called Rolle, Bob Rolle. 11 Q. Rolle, R-o-l-l-y? 12 A. Double L -- no, R-o-l-l-e. 13 Q. All right. Anybody else? 14 A. Not that I can. 15 Q. And who hired you to do this 16 consulting work for J&J? 17 A. They turned up at my -- some 18 individuals turned up at my lab in the late 19 '60s and just asked me whether I would -- you 20 know, did I look at mineral powders and dust 21 particles and would I like to examine a 22 sample or two for them. 23 Q. Were you already involved in 24 asbestos work at the time? 25 A. Well, yes. Involved with</p>	<p>1 they contained? 2 Do you remember what you did? 3 A. Oh, he did mention they were 4 talc, you know, based materials. 5 Q. Yeah. 6 A. Yeah. And, in fact, he did 7 explain to me that he was from J&J and, you 8 know, they use a lot of mineral powder. He 9 just wanted this one. 10 Q. And did he tell you which talc 11 mine it came from or anything like that? 12 A. At the time, no, he didn't. 13 Q. Did you subsequently find out? 14 A. Yes. I believe it was from the 15 Vermont mine, the initial sample. 16 Q. I'm sorry? 17 A. The Vermont mine. 18 Q. Vermont. 19 A. Yeah. 20 Q. Yeah. 21 Okay. And did you analyze that 22 talc? 23 A. Yes, I produced a result. 24 Q. What method did you use? 25 A. At that time it was X-ray</p>

Page 14

1 diffraction and microscopy, electron
2 microscopy.
3 Q. Do you remember -- by the way,
4 have you looked at those test results
5 recently?
6 Have you gone back and looked
7 at your notes or anything?
8 A. Yeah. Well, those test results
9 are actually contained in a report which
10 I've --
11 Q. Given to Peter?
12 A. Given to Peter, yeah.
13 MR. BICKS: And we gave to you.
14 THE WITNESS: Yeah. Because
15 the same sample was given to about ten
16 other consultants to look at. But it
17 was their way of sort of seeing how
18 people compared.
19 QUESTIONS BY MR. LANIER:
20 Q. Okay. Did you find any
21 contaminants in the talc?
22 A. I would have to look at my
23 report.
24 Q. And all I'm doing right now,
25 I'm just checking your memory. I'm seeing if

Page 15

1 you've looked at it and how good you got it.
2 Don't worry about it.
3 A. It was mainly talc.
4 Q. Yeah.
5 A. With a few impurities.
6 Q. With a few what?
7 A. Impurities.
8 Q. Impurities.
9 I've heard it said that talc is
10 a good delivery system for impurities.
11 Would you agree with that?
12 A. Talc is talc. I mean, you
13 know, it may be found and associated with
14 other mineral particles, but talc particles
15 themselves are -- other than -- I'm trying --
16 it's very good at absorbing organics, that's
17 why, you know, the perfumes in talc stick to
18 the particles and so you have a pleasant odor
19 if you throw the powder around.
20 Q. Okay. Do you remember -- well,
21 let me ask you this: You are a scientist of
22 sorts, right?
23 A. I'm basically an engineer.
24 Q. All right. An engineer?
25 A. Yes.

Page 16

1 Q. And you would agree with me as
2 an engineer precision is important, isn't it?
3 A. Yeah. Yes, indeed.
4 Q. And not only is precision
5 important, but being thorough and complete is
6 important, too, right?
7 A. Yes.
8 Q. And it's important that you
9 report things accurately, true?
10 A. Yes. As best you can, yes.
11 Q. So if you do, for example, 15
12 samples and you test 15 samples, you would
13 want to report on 15 samples, right?
14 A. Yes.
15 Q. Okay. You don't eliminate
16 those things that aren't favorable; you tell
17 the truth, the whole truth, right?
18 A. Right.
19 Q. Okay. How many companies would
20 you say you've tested materials for in your
21 life? Hundreds?
22 A. Hundreds.
23 Q. How many companies have hired
24 you to test talc?
25 A. That would be dozens.

Page 17

1 Q. How many mines of -- talc mines
2 would you say have sourced the material
3 you've tested?
4 In other words, how many
5 different mines have you tested?
6 A. Probably six, six or seven.
7 Six.
8 Q. What do you do for hobbies?
9 A. I go to work.
10 Q. You sound like us.
11 A. No. I'm a gardener, and I sail
12 and probably go to work.
13 Q. Yeah. All right. Ever go
14 fishing?
15 A. No.
16 Q. No. Okay.
17 A. Only off the boat if I'm
18 sailing.
19 Q. Okay. Are you getting paid for
20 your time for being here?
21 A. Yes.
22 Q. What do you charge?
23 A. For the deposition, \$500 an
24 hour, and for my general time, \$250 an hour.
25 Q. Do you have any active

Page 18

1 litigation files at this point in your life?
 2 A. No.
 3 Q. So this is basically -- Johnson
 4 & Johnson right now is the work for you in
 5 terms of litigation; is that fair?
 6 A. No.
 7 Q. What else?
 8 A. I haven't been involved in any
 9 litigation with Johnson & Johnson since about
 10 19 -- late 1970s.
 11 Q. Okay. But what I mean is right
 12 now, at this point in your life, 2018, do you
 13 have anything else that you're working on
 14 that's litigation-related other than this
 15 Johnson & Johnson matter?
 16 A. Well, the -- I tell you, I sent
 17 you the -- I go to work. What I do because
 18 I'm an honorary consultant to the laboratory
 19 in the medical school, the section on
 20 cellular pathology, and we run a service
 21 examining lung tissue specimens and other odd
 22 biological samples to estimate or to
 23 determine whether there's been any exposure
 24 to a harmful substance, and we report these
 25 results back. They come in from what are

Page 19

1 called the Coroner's Court in the UK. So the
 2 coroner will send tissue samples from cases,
 3 and we examine them, report on them and send
 4 the result back.
 5 So we have a permanent, ongoing
 6 litigation situation, really, because a lot
 7 of these samples are used in litigation to
 8 determine whether there's been an exposure to
 9 X or Y, et cetera, and how severe.
 10 So, you know, the answer the
 11 your question is really, yeah, there's
 12 litigation there in the lab all the time.
 13 Q. Well, and that makes some
 14 sense, and I understand what you're saying.
 15 But in terms of being hired to
 16 come give opinions like you are here --
 17 A. Sure.
 18 Q. -- like you've done before for
 19 I think you told me Eagle-Picher, Johns
 20 Manville, lots of small companies.
 21 Do you have anybody else who is
 22 using you right now in the US in litigation?
 23 MR. BICKS: Mark, I'm not going
 24 to fuss with you on the opinion thing,
 25 but you know that he's not here giving

Page 20

1 opinion testimony. He's here as a
 2 witness to talk about the work that he
 3 did. But you asked him opinions, so
 4 we don't --
 5 MR. LANIER: I gotcha.
 6 MR. BICKS: -- fuss around with
 7 that.
 8 THE WITNESS: No.
 9 QUESTIONS BY MR. LANIER:
 10 Q. Okay. Is it okay to have
 11 infants breathe tremolite?
 12 Is that a good thing?
 13 A. No, I wouldn't have thought so,
 14 no. Any dust is, you know, harmful.
 15 Q. But in terms of the amphiboles,
 16 do you believe it's a good thing to have
 17 infants breathe any of the amphiboles?
 18 A. As I said to you, all dusts are
 19 harmful. If you inhale enough of them and
 20 they accumulate in the lungs, they can cause
 21 problems, yeah.
 22 Q. Right, and I'm not fussing
 23 that.
 24 But wouldn't you testify and
 25 haven't you testified that it's worse to

Page 21

1 breathe tremolite than it is to breathe talc,
 2 or is it the same in your mind?
 3 A. Well, it depends entirely on
 4 the characteristics of the talc, which is
 5 contained -- if it's contained -- the
 6 tremolite, rather, the contents of the
 7 tremolite if it's contained in the talc.
 8 For example, counter powder,
 9 the majority of particles in a counter talc
 10 are nonrespirable. So you may expose
 11 somebody to a dust cloud generated from a
 12 product, but it's only a very small
 13 proportion of those particles, what we would
 14 call inhalable, respirable, and unlikely to
 15 settle in the lungs and subsequently cause a
 16 problem.
 17 Q. Okay. So in that sense --
 18 don't answer for all dusts, but answer
 19 specifically for asbestos dust.
 20 The amphophile asbestos dust,
 21 is it a good thing to have infants breathe
 22 amphophile asbestos like tremolite or
 23 anthophyllite?
 24 A. On a regular basis, no.
 25 Q. At all? Is it ever a good

Page 22

1 thing?
 2 A. It's a question of magnitude.
 3 Q. And that wasn't my question.
 4 Is it ever a good thing?
 5 A. No.
 6 Q. Okay. Thank you.
 7 You have children? You have
 8 grandchildren?
 9 A. Sure.
 10 Q. You never purposefully had any
 11 of them breathe amphophile asbestos, did you?
 12 A. I have no idea.
 13 Q. You sure wouldn't have done it
 14 on purpose, would you?
 15 A. No, but it's a
 16 natural-occurring mineral and you're going to
 17 run into some amphophile dust somewhere,
 18 that's...
 19 Q. But you sure don't want to just
 20 bring it in voluntarily, do you?
 21 A. Oh, no. No. No.
 22 Q. All right. Thank you.
 23 Why is talc contaminated with
 24 asbestos? Geologically, explain that,
 25 please.

Page 23

1 A. I don't think it is. Of the
 2 samples of commercial talc -- and I'm talking
 3 really about cosmetic-grade talcs. I can't
 4 my hand on my heart and say that I've ever
 5 found one that was contaminated with
 6 asbestos.
 7 I have looked at samples of
 8 industrial-grade talc where there have been
 9 some particles which one would consider
 10 possible, you know, problems.
 11 Q. Let's just deal with that.
 12 Why would industrial-grade
 13 talc -- why would a talc mine of talc also
 14 have veins or portions of asbestos in it?
 15 Just geologically. I'm looking
 16 for the geologic explanation.
 17 A. Most talc mines don't have
 18 asbestos in them.
 19 Q. Do any?
 20 A. They may have the mineral,
 21 tremolite, for example, but it's not
 22 asbestiform. And taking -- I'm using
 23 asbestiform in a way which compares the
 24 morphology of dust particles produced from
 25 material in a mine compared to a commercial

Page 24

1 sample of asbestos. And there are very few
 2 commercial samples of tremolite asbestos to
 3 actually compare it with. So one really
 4 compares fibrous particles you find in
 5 samples with the commercial forms of the
 6 amphophiles.
 7 Q. So your testimony is that talc
 8 mines are not contaminated with asbestos?
 9 A. That's right.
 10 Q. Okay. If a company is making a
 11 product that's got asbestos in it or might
 12 have asbestos in it, should a company warn
 13 the people who are using the product in your
 14 mind?
 15 MR. BICKS: Objection to the
 16 form.
 17 THE WITNESS: Well, if there
 18 was talc with asbestos in it and
 19 somebody was going to put it on the
 20 market, it's obvious that you -- you
 21 would require some warning.
 22 QUESTIONS BY MR. LANIER:
 23 Q. All right. Do you agree that
 24 products should have zero tolerance for
 25 asbestos in them, or is it okay for products

Page 25

1 to have asbestos in them?
 2 A. It really depends on how you
 3 use the word "asbestos." You know, if you're
 4 using it to describe dust particles, which
 5 are similar in morphology to commercial forms
 6 of asbestos, then obviously it's -- you know,
 7 it's logical to use that definition.
 8 But to compare it with dusts
 9 which contain only the mineral and not the
 10 form of particles, it's, you know...
 11 Q. Well, let me ask it this way:
 12 Can you tell us if there is a safe level for
 13 amphophiles, asbestiform amphophiles?
 14 A. Asbestiform? Asbestos
 15 amphophiles?
 16 Q. Yeah.
 17 A. I would say yes.
 18 Q. There is a safe level?
 19 A. Yes. Depending upon the
 20 mineral.
 21 Q. Wow.
 22 Do you have any -- what
 23 independent scientific organizations back up
 24 that opinion that there's a safe level that's
 25 not carcinogenic?

Page 26

1 Anybody?
 2 A. It's -- that's my opinion.
 3 Q. Right.
 4 I'm just asking if it's
 5 based -- I know you did work for IARC. I
 6 know you've done work for others. And I'm
 7 asking if there's any nonindustry scientific
 8 entity that agrees that there is some safe
 9 threshold level of asbestiform amphophile
 10 exposure where no one needs to be concerned
 11 about cancer?
 12 A. Are you talking about a
 13 situation or an organization?
 14 Q. An organization.
 15 A. Well, there are very few of
 16 these organizations around.
 17 Q. Okay.
 18 A. But essentially if you go to
 19 some location, some countries, Turkey, for
 20 example, tremolite is mined extensively in
 21 middle Turkey and -- on a very small scale,
 22 but it's used extensively in stucco
 23 manufacture. And in those situations, there
 24 are locations where people have been working
 25 with the mineral for many, many years and

Page 27

1 employing it and there has been no dramatic
 2 biological response.
 3 Q. Okay. I'm not sure if you
 4 understood what I was asking.
 5 I'm talking about what
 6 organization says that there is some safe
 7 level, some magic cancer threshold level, for
 8 asbestiform amphophiles?
 9 A. Oh, I don't think any
 10 organization. There are no organizations, we
 11 shall say that.
 12 Q. Okay. Thank you.
 13 A. Yeah. They are very few and
 14 far between, the organizations I'm saying.
 15 Q. Okay. Speaking of
 16 organizations, did you ever do any work for
 17 or with or in conjunction with the Industrial
 18 Hygiene Foundation?
 19 A. I'm not familiar with that
 20 title.
 21 Q. Okay. That was -- the
 22 Industrial Hygiene Foundation was mainly in
 23 the United States and Canada, and it kind of
 24 quit its activities in the '80s or so, '70s,
 25 but it's been active since the late '30s.

Page 28

1 Doesn't ring a bell?
 2 A. No.
 3 MR. BICKS: Objection to the
 4 form.
 5 QUESTIONS BY MR. LANIER:
 6 Q. Okay. Do talc particles
 7 translocate in the body?
 8 A. As far as I'm aware, no.
 9 Q. Do asbestos particles
 10 translocate in the body?
 11 A. As far as I'm aware, no.
 12 They will leave the body. The
 13 vast majority of the particles you may
 14 inhale, talc or asbestos, will normally leave
 15 the body via the back of your throat when you
 16 swallow them.
 17 Q. Huh.
 18 What do you mean when you use
 19 the term "lathlike" or "lathlike,"
 20 l-a-t-h-l-i-k-e?
 21 A. It's a term which is often used
 22 to define an object which is fairly longer
 23 than it's wide and thinner than it's wide.
 24 Q. So it applies to more than an
 25 asbestos fiber or something like that; it can

Page 29

1 apply to all sorts of different types of
 2 fibers?
 3 A. It's a general description
 4 of --
 5 Q. Sizing?
 6 A. Of objects of that sort of,
 7 yeah, shape.
 8 Q. What do you mean when you use
 9 the term "fibrous" when you're talking about
 10 different things you've analyzed?
 11 A. It refers to the fact that when
 12 you look at the particles there appear to be
 13 quite a few -- quite a large proportion of
 14 them are longer than they wanted.
 15 Q. Is that relevant on whether or
 16 not you're determining if they're
 17 asbestiform?
 18 A. Well, you've got to be longer
 19 than you're wide to be asbestiform because
 20 you're comparing your particle with a
 21 commercial asbestos mineral.
 22 Q. All right. Define for me what
 23 you mean when you talk about something being
 24 asbestiform.
 25 A. It has a similar shape to

Page 30	Page 32
<p>1 particles which may be formed from commercial 2 so-called asbestos minerals. 3 Q. Does that mean that it would be 4 fibrous or lathlike? 5 A. There may be, yeah, some 6 lathlike mixed with ordinary fibers which are 7 sort of equally dimensional in terms of 8 diameters. 9 Q. If you've got -- well, define 10 for me asbestos, please. 11 A. I can't. 12 Q. Why not? 13 A. Well, it's one of these words 14 that has no meaning. It's a commercial term 15 used to indicate a material which would be 16 used in certain situations. And as grown up 17 as it were, it's like saying potatoes and 18 you're not really saying which type of potato 19 or what form of potato, sweet potato. It's a 20 general term. 21 Q. Huh. 22 Do you eat potatoes? 23 A. Yeah. I grow them, yeah. 24 Q. Do you go like into a pub and 25 say, "I'll have the this-and-this with a side</p>	<p>1 type of mineral. So, for example, if I 2 compared that particle with crocidolite, 3 there would be a dramatic difference. Okay. 4 If I compared that particle 5 with, say, anthophyllite, there would be some 6 similarity. The anthophyllite fibers are 7 normally thicker and longer than crocidolite, 8 which are long and thin. 9 Q. So is crocidolite always 10 asbestiform? 11 A. No. 12 Q. Well, that's what I'm trying to 13 get at is what makes it asbestiform, and what 14 I'm hearing from you is, well, it's 15 asbestiform if it's similar to something else 16 that we're going to call asbestiform. 17 Pretend I know nothing about 18 this. Tell me what you mean when you say 19 asbestiform, please. 20 A. That you have a sample with 21 particles -- containing particles, fibrous 22 particles, which have dimensions which are 23 similar to those produced from samples of 24 commercial mineral which are used in industry 25 and are referred to as asbestos.</p>
Page 31	Page 33
<p>1 of potatoes?" 2 A. No. A packet of crisps, 3 they're made from potatoes. 4 Q. Do you ask them on your crisps 5 what kind of potatoes they used? 6 A. Oh, well, crisps are normally 7 manufactured from particular varieties of 8 potato. 9 Q. A russet or what? 10 A. Oh, I couldn't give you the -- 11 but they're potatoes which grow with a 12 suitable shape to manufacture crisps. 13 Q. All right. Now, how do you 14 tell if a piece of -- not a piece, a particle 15 of tremolite is asbestiform or not? 16 A. Well, if you're going to say 17 this tremolite is asbestiform, you would 18 obviously be measuring it to determine its 19 length and diameter and then compare those 20 values with fibers or particles produced from 21 commercial so-called asbestos products. 22 Q. When you use the word like 23 "asbestos," though, that word by you has no 24 meaning because I asked you what it meant. 25 A. Well, you're not defining the</p>	<p>1 Q. So asbestiform means -- all 2 right. And maybe it will help. 3 Can you see the screen down 4 there if I write on here? 5 A. Sure. 6 Q. Okay. So I've got a piece of 7 tremolite. 8 A. Sure. 9 Q. And so I've got a question I 10 need to ask on that piece of tremolite, and 11 here's my question: Is it asbestiform? 12 Are you with me? 13 A. Yeah. 14 Q. Now, your answer to that is 15 going to be: Is it the same size or similar 16 in dimensions, I think was your language, 17 similar in dimensions to commercial 18 tremolite. 19 Right? Is that the question? 20 A. No. 21 Q. Is that the answer? 22 A. Commercial asbestos. You're 23 talking about asbestiform, not tremolite 24 form. In fact, there isn't -- I don't know 25 of any source of commercial tremolite.</p>

Page 34

1 Q. I thought you told me in Turkey
2 they mine tremolite.
3 A. Oh, yes.
4 Q. Use it commercially?
5 A. They have, yes.
6 Q. Okay. Well, then you just said
7 I don't know of any source of commercial
8 tremolite.
9 Isn't Turkey a source?
10 A. But it's not sold on the market
11 as tremolite. In fact, they turn it into
12 clay tiles.
13 Q. Okay. So if I want to know if
14 that tremolite is asbestiform, I'd want to
15 know is it similar in dimensions to
16 commercial asbestos. And when I asked you
17 what you mean by asbestos, you said it has no
18 meaning.
19 A. That's right.
20 MR. BICKS: Objection to the
21 form.
22 QUESTIONS BY MR. LANIER:
23 Q. So I'm a little bit confused on
24 how you get to determine if tremolite is
25 asbestiform.

Page 35

1 A. Well, if the particles that
2 produced at that particular location, do they
3 compare with fibers or particles produced
4 from a commercial asbestos mine.
5 So you would have to measure
6 the particles and compare the size
7 distributions, simply.
8 Q. But let's say you've got it in
9 tissue.
10 A. Yeah.
11 Q. You're looking at a particle in
12 tissue. Now, you know by definition if it's
13 in the tissue, it's been respired; it's
14 been --
15 A. Sure.
16 Q. So we know it's not a bundle.
17 We know it's a single fiber, right?
18 A. Right.
19 Q. Because you don't respire
20 bundles; you respire single fibers?
21 A. You can respire bundles.
22 Q. But they lodge up so high it's
23 not going to go down, right?
24 A. Right.
25 Q. All right. So you're saying

Page 36

1 that you determine if it's asbestiform by
2 whether or not that single particle, fiber,
3 is similar in dimensions to commercial fibers
4 that are broken down and separated and
5 non-bundlized?
6 A. Yeah, so they're airborne.
7 Yeah, airborne commercial asbestos fiber,
8 yes.
9 Q. Huh.
10 And so you'd be looking for on
11 tremolite to determine if it's asbestiform,
12 you would be looking to see is it similar in
13 dimensions to commercial tremolite, but
14 you've told me there is no commercial
15 tremolite?
16 A. Virtually, no.
17 Q. So what are you comparing it
18 to?
19 A. Well, you would compare your
20 tremolite with commercial amphophile
21 asbestos.
22 Q. So but there's such a
23 difference between crocidolite and
24 anthophyllite or amosite or --
25 A. Yes, there's big differences,

Page 37

1 but they would be the yardstick by which you
2 would define whether or not that particle is
3 asbestiform or not.
4 Q. So what dimensions will make it
5 asbestiform?
6 Are there some set dimensions?
7 A. Yes, you can sort of -- you can
8 look at the average dimensions of amosite,
9 airborne dust and look at the average
10 dimensions of crocidolite and airborne dust
11 and you can take your fiber and look at its
12 dimensions and you can say, "Oh, it sits
13 within this range of dimensions."
14 Q. And is that a 3 to 1 ratio or
15 is it --
16 A. No.
17 Q. What are the dimensions?
18 A. The dimension is a length and
19 the diameter.
20 Q. All right. What is the average
21 length range and average diameter range that
22 makes it an amphophile -- I mean, that makes
23 it an asbestiform?
24 A. It depends on the source of the
25 amphophile.

Page 38

1 Q. Okay. Give me some examples.
2 A. If we took Australian
3 crocidolite and you'd say that the fibers --
4 if the fibers were within 1 to 10 microns --
5 1 to 30 microns in length and with
6 diameter -- .15 to .06 in diameter and you
7 had a fiber and you're comparing it, then you
8 would say this is obviously...
9 MR. BICKS: I think he's
10 getting distracted with the --
11 MR. LANIER: Sorry.
12 QUESTIONS BY MR. LANIER:
13 Q. Keep going. I'm listening.
14 My side is worried that maybe
15 you misspoke when you said .15 to .06 microns
16 in diameter.
17 A. Diameter, yeah.
18 Q. Okay.
19 A. That's Australian crocidolite,
20 yeah.
21 Q. So that would tell you if
22 you're comparing it to Australian
23 crocidolite.
24 What you if you compare it
25 instead to a South African asbestos?

Page 39

1 A. It's a little different. It's
2 still 30 microns in length and because we
3 don't normally find airborne amphophile
4 asbestos fibers longer than 30, you do get
5 the odd one or two, but for South African
6 material instead of being -- it would be the
7 same length range but a slightly larger
8 diameter range, something like .15, .2,
9 again, down to .06, .07.
10 Q. What about American asbestos
11 and Canadian asbestos, what are their sizes?
12 A. Well, you're talking about
13 serpentine asbestoses now, not amphophile.
14 Q. Okay.
15 A. And there are lots of fibers
16 around that are similar in dimensions to
17 serpentine asbestos.
18 Q. What about though --
19 serpentine, you're talking about the
20 crocidolite that's spherical?
21 A. Yeah.
22 Q. What about the Calidria
23 crocidolite that's not spherical but is
24 straight?
25 A. Yeah.

Page 40

1 Q. What are your average sizes for
2 that?
3 A. Oh, for Calidria, you very
4 rarely get fibers over 5 microns in length,
5 but diameters down to, again, .1, .2 of a
6 micron.
7 Q. .1?
8 A. .2 of a micron in diameter.
9 Q. I think we've got it there.
10 I'll mark this as Exhibit 1 to
11 your deposition just as a demonstrative so
12 we've got the notes.
13 (Pooley Exhibit 1 marked for
14 identification.)
15 QUESTIONS BY MR. LANIER:
16 Q. Testing methods, tell me what
17 are the different ways to test to see if a
18 product has asbestos in it.
19 Talc, what are the different
20 methods?
21 A. Well, it really depends what
22 you're going to be testing it for.
23 Q. All right. I've got a talc
24 sample and I want you to test this talc
25 sample for asbestos.

Page 41

1 What are the different methods
2 you can use that are acceptable and good?
3 A. Well, there's only one method
4 to establish whether you have fibers which
5 are asbestiform, and that's to use a
6 microscopic method.
7 Q. But you can't look at the whole
8 sample of talc, can you?
9 A. It depends how you prepare it.
10 Q. All right. Let's start then
11 with preparation.
12 A. You don't have to look at the
13 whole sample.
14 Q. All right. Tell me how to
15 prepare the talc for examination.
16 A. Well, you're examining it
17 because of its possible disease potential.
18 Q. Right.
19 So how do you prepare the talc
20 so that you can examine it?
21 A. You would take a sample of the
22 talc carefully so it's representative of the
23 mass, and you would prepare a dust cloud from
24 it.
25 Q. And how do you prepare a dust

Page 42

1 cloud?
2 A. Put some on your hands and blow
3 or you can put it in a container and shake
4 it.
5 Q. And then what do you do after
6 you prepare a dust cloud?
7 A. Then you sample the dust you've
8 created to find out whether or not you've got
9 or managed to entrap or -- you know, entrap
10 fibrous particles in the dust cloud or
11 fibrous particles are carried over into the
12 dust cloud, if there are any fibrous
13 particles there to start with.
14 Q. Is that -- what is your error
15 rate?
16 A. Error rate?
17 Q. Yeah.
18 In other words, if you're going
19 to sample a dust cloud, how do you know that
20 you're truly getting a representation of all
21 of the minerals present or all of the
22 particles present?
23 A. Well, if you start off with a
24 fine powder and you suspend a gram or
25 whatever of that material and then you sample

Page 43

1 it, it's totally mixed and there's no reason
2 why the sample you take should not be truly
3 representative of the cloud you've taken,
4 otherwise you're not using the right sampling
5 technique.
6 But that's -- that's the basis
7 for all airborne test sampling. You go out
8 and use test samplers to take a sample from
9 the air knowing that the sample you take is
10 going to be representative of that location
11 or whatever it might be in terms of the
12 particles, et cetera, it contains.
13 Q. When you sample the dust, how
14 do you grab it?
15 A. Onto a filter.
16 Q. You just run a filter through
17 the air?
18 A. No, pull the air through a
19 filter.
20 Q. Pull the air through a filter.
21 And then how do you get the
22 dust off the filter?
23 A. You prepare it to produce a
24 microscopic preparation.
25 Q. How do you do that, though?

Page 44

1 A. For airborne dusts, you would
2 use what is called the direct technique and
3 coat the filter with carbon, which would trap
4 all of the dust you've pulled down onto the
5 filter, and you remove the filter and you
6 have a carbon film with the dust particles
7 embedded in the carbon film for you to look
8 at. You could look at as many as you wanted
9 and scan to establish, you know, A, have I
10 got any fibers here or any other particles
11 you may be looking for; and, B, what is the
12 proportion distribution of these particles in
13 the dust.
14 It's very accurate.
15 Q. What type of scanning device
16 are you using at that point?
17 A. You use a transmission -- if
18 you wanted -- if you're looking for fine
19 asbestiform fibers, you've got to use a
20 machine which would define asbestiform
21 fibers, fine asbestiform fibers, so a
22 transmission electron microscope.
23 Q. A TEM machine?
24 A. Yes.
25 Q. And then you examine with a TEM

Page 45

1 the entire carbon film with every element on
2 it?
3 A. It depends how accurate you
4 want to be. You can look at one particle,
5 but that's not very accurate, or you can look
6 at two, it's a little bit more accurate. So
7 you carry on and build up an accuracy until
8 you've got --
9 Q. Until you feel like you've done
10 a good enough job?
11 A. Sure.
12 And it's very, very easy to --
13 in a preparation like that to actually
14 distinguish a fiber from any other nonfibrous
15 particle. So fibers lend themselves to very,
16 very detailed detection.
17 Q. Stupid question because I'm not
18 an engineer: How do you know that there's
19 not a fiber on top of a fiber?
20 A. Well, that comes with a testing
21 technique and building up a technique: You
22 know, how long should I sample for, how much
23 should I collect. That comes with
24 experience.
25 Q. A lot of room for variation in

Page 46

1 this, isn't there?
 2 A. No. It is performed accurately
 3 and it's a very, very simple technique as
 4 long as you play by the rules, as it were,
 5 you know.
 6 Q. So if I've got someone who
 7 plays by the rules and they find asbestos in
 8 talc, you wouldn't fuss with those results
 9 because there's no room for error as long as
 10 they're competent, right?
 11 MR. BICKS: Object to the form.
 12 THE WITNESS: Well, yeah, there
 13 is -- you can introduce an error
 14 because you've then still got to --
 15 you define the fiber, but you've got
 16 to define whether or not it's an
 17 asbestos-type fiber.
 18 So it's the analysis of the
 19 specimen and the expertise that you
 20 use. You know, for example, am I
 21 measuring it correctly; am I measuring
 22 its chemical composition correctly.
 23 You know, you may perform diffraction;
 24 am I looking at the diffraction
 25 pattern and interpreting that

Page 47

1 correctly.
 2 QUESTIONS BY MR. LANIER:
 3 Q. How accurate is X-ray
 4 diffraction?
 5 A. X-ray diffraction is very crude
 6 in comparison with a TEM.
 7 Q. Are you familiar with a
 8 concentration method of testing?
 9 A. It doesn't ring a bell.
 10 MR. LANIER: Okay. That's all
 11 I've got. I'll see you tomorrow.
 12 Thank you.
 13 VIDEOGRAPHER: I should go off
 14 the record, right?
 15 MR. LANIER: Yeah.
 16 VIDEOGRAPHER: Okay. The time
 17 is 10:21 a.m. Going off the record.
 18 (Deposition concluded at 10:21 a.m.)
 19 -----
 20
 21
 22
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 24
 25

Page 48

1 CERTIFICATE
 2
 3 I, CARRIE A. CAMPBELL, Registered
 4 Diplomat Reporter, Certified Realtime
 5 Reporter and Certified Shorthand Reporter, do
 6 hereby certify that prior to the commencement
 7 of the examination, Frederick Pooley, Ph.D.
 8 was duly sworn by me to testify to the truth,
 9 the whole truth and nothing but the truth.
 10 I DO FURTHER CERTIFY that the
 11 foregoing is a verbatim transcript of the
 12 testimony as taken stenographically by and
 13 before me at the time, place and on the date
 14 hereinbefore set forth, to the best of my
 15 ability.
 16
 17 I DO FURTHER CERTIFY that I am
 18 neither a relative nor employee nor attorney
 19 nor counsel of any of the parties to this
 20 action, and that I am neither a relative nor
 21 employee of such attorney or counsel, and
 22 that I am not financially interested in the
 23 action.
 24
 25

17 CARRIE A. CAMPBELL,
 18 NCRA Registered Diplomat Reporter
 19 Certified Realtime Reporter
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 Dated: January 31, 2018

Page 49

1 INSTRUCTIONS TO WITNESS
 2
 3 Please read your deposition over
 4 carefully and make any necessary corrections.
 5 You should state the reason in the
 6 appropriate space on the errata sheet for any
 7 corrections that are made.
 8 After doing so, please sign the
 9 errata sheet and date it. You are signing
 10 same subject to the changes you have noted on
 11 the errata sheet, which will be attached to
 12 your deposition.
 13 It is imperative that you return
 14 the original errata sheet to the deposing
 15 attorney within thirty (30) days of receipt
 16 of the deposition transcript by you. If you
 17 fail to do so, the deposition transcript may
 18 be deemed to be accurate and may be used in
 19 court.
 20
 21
 22
 23
 24
 25

Page 50

1 **ACKNOWLEDGMENT OF DEPONENT**

2

3

4 I, _____, do

5 hereby certify that I have read the foregoing

6 pages and that the same is a correct

7 transcription of the answers given by me to

8 the questions therein propounded, except for

9 the corrections or changes in form or

10 substance, if any, noted in the attached

11 Errata Sheet.

12

13 _____

14 Frederick Pooley, Ph.D. DATE

15

16 Subscribed and sworn to before me this

17 _____ day of _____, 20 ____.

18 My commission expires: _____

19 Notary Public

20

21

22

23

24

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Page 52

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2 **LAWYER'S NOTES**

3 -----

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Page 51

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9

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11

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13

14

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17

18

19

20

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22

23

24

25

A	25:15 27:8	31:23 32:25	7:4 14:13	10:22 48:3,17
ability 48:9	analysis 46:18	33:22 34:16,17	19:23 20:6	canada 27:23
absorbing 15:16	analytical 12:10	35:4 36:7,21	24:15 28:3	canadian 39:11
acceptable 41:2	analyze 13:21	38:25 39:4,10	34:20 38:9	cancer 26:11
accumulate 20:20	analyzed 29:10	39:11,17 40:18	46:11	27:7
accuracy 45:7	angeles 2:17	40:25 46:7	big 8:21 36:25	cant 12:23 23:3
accurate 44:14	anoonan 2:22	asbestoses 39:13	biological 18:22	30:11 41:7
45:3,5,6 47:3	answer 19:10	asbestostype	27:2	carbon 44:3,6,7
49:18	21:18,18 33:14	46:17	bird 3:1	45:1
accurately 16:9	33:21	asked 11:19	bit 34:23 45:6	carcinogenic
46:2	answers 50:5	20:3 31:24	blow 42:2	25:25
acknowledgm...	anthophyllite	34:16	boat 17:17	cardiff 6:6,14
4:13 50:1	21:23 32:5,6	asking 26:4,7	boatload 6:18	carefully 41:22
action 48:12,13	36:24	27:4	bob 11:10	49:4
active 17:25	anybody 11:6,13	associated 15:13	body 28:7,10,12	carrie 1:16
27:25	19:21 26:1	atlanta 3:3	28:15	10:22 48:3,17
activities 27:24	anyway 12:24	attached 4:10	borgwarner 1:6	carried 42:11
administer 5:15	appear 29:12	49:11 50:7	5:10	carry 45:7
african 38:25	appearances 4:3	attorney 48:11	boulevard 2:16	cases 8:19 19:2
39:5	5:12	48:12 49:15	breathe 20:11	cause 8:22,25
age 5:18	applies 28:24	ausilia 2:21	20:17 21:1,1	20:20 21:15
agree 15:11 16:1	apply 29:1	australian 38:2	21:21 22:11	cellular 18:20
24:23	appropriate	38:19,22	bring 12:20	certain 30:16
agrees 26:8	49:6	average 37:8,9	22:20	certificate 4:12
ah 7:25	approximately	37:20,21 40:1	broken 36:4	48:1
ahead 8:16	7:16	averaged 7:19	brought 12:22	certified 1:17,19
air 43:9,17,18	arent 16:16	aware 28:8,11	brunswick	1:20 48:3,4,18
43:20	asbestiform		10:10 12:10	48:18,19,20,21
airborne 36:6,7	23:22,23 25:13	B	build 45:7	48:21
37:9,10 39:3	25:14 26:9	b 44:11	building 45:21	certify 48:4,7,10
43:7 44:1	27:8 29:17,19	back 14:6 18:25	bunch 6:9,17	50:4
al 1:6	29:24 31:15,17	19:4 25:23	bundle 35:16	cetera 9:12 19:9
allegra 2:21	32:10,13,15,16	28:15	bundles 35:20	43:12
alston 3:1,2	32:19 33:1,11	based 10:6 13:4	35:21	change 51:3
american 39:10	33:23 34:14,25	26:5	burdens 9:12	changes 49:10
amosite 36:24	36:1,11 37:3,5	basically 8:20		50:6
37:8	37:23 41:5	15:23 18:3	C	characteristics
amphiboles	44:19,20,21	basis 21:24 43:6	c 2:1,3,7,15	21:4
20:15,17	asbestos 11:24	becker 3:1,2	calidria 39:22	charge 17:22
amphophile	12:1 21:19,20	behalf 5:21	40:3	checking 14:25
21:20,22 22:11	21:22 22:11,24	believe 8:24	california 1:18	chemical 46:22
22:17 26:9	23:6,14,18	13:14 20:16	2:17 48:18	children 22:7
36:20 37:22,25	24:1,2,8,11,12	bell 28:1 47:9	call 12:12,13	chrysotile 8:22
39:3,13	24:18,25 25:1	berquist 2:9,9	21:14 32:16	cirsch 2:15
amphophiles	25:3,6,14 28:9	best 7:21 8:1	called 10:15	clay 34:12
24:6 25:13,13	28:14,25 29:21	10:23 16:10	11:10 19:1	client 9:13
	30:2,10 31:21	48:9	44:2	clients 7:22 9:4
		bicks 2:20 6:20	campbell 1:16	

9:7	29:20 36:17	46:22 47:1	demonstrative	46:23,24 47:4
cloud 21:11	38:7,22	cosmeticgrade	40:11	47:5
41:23 42:1,6	comparison	23:3	dennis 9:16	dimension 37:18
42:10,12,19	47:6	couldnt 31:10	depending	dimensional
43:3	competent	counsel 2:18,24	25:19	30:7
coat 44:3	46:10	3:4 48:11,12	depends 21:3	dimensions
cold 12:12	complete 16:5	counter 21:8,9	25:2 37:24	32:22 33:16,17
coleman 3:7	composition	countries 26:19	40:21 41:9	34:15 36:3,13
collect 45:23	46:22	county 1:1	45:3	37:4,6,8,10,12
com 1:23 2:4,8,9	concentration	court 1:1,20	deponent 4:13	37:13,17 39:16
2:10,11,16,21	47:8	5:14 8:8 9:9	5:11 50:1	diplomate 1:17
2:22 3:2	concerned 26:10	10:21 19:1	deposes 5:20	48:3,17
come 18:25	concluded 47:18	48:19,21 49:19	deposing 49:14	direct 5:23 7:5
19:16	conflict 6:19	courts 8:5	deposition 1:11	44:2
comes 45:20,23	confused 34:23	created 42:8	4:10 5:7 6:22	discovery 1:11
coming 12:12	conjunction	crisps 31:2,4,6	7:4 17:23	discussed 12:15
commencement	27:17	31:12	40:11 47:18	disease 41:17
48:4	consider 23:9	crocidolite 8:20	49:3,12,16,17	distinguish
commencing	consultancy	32:2,7,9 36:23	depositions 9:9	45:14
1:15	9:11	37:10 38:3,19	deps 1:23,23	distracted 38:10
commercial	consultant 10:5	38:23 39:20,23	describe 10:2	distribution
23:2,25 24:2,5	18:18	cross 7:6	25:4	44:12
25:5 29:21	consultants	crude 47:5	description 4:8	distributions
30:1,14 31:21	14:16	cyprus 3:4	29:3	35:7
32:24 33:17,22	consulted 9:25		detailed 45:16	doctor 6:11
33:25 34:7,16	consulting 11:16	D	detection 45:16	doesnt 10:23
35:4 36:3,7,13	contact 11:9	d 1:12 3:11 5:17	determine 18:23	28:1 47:9
36:14,20	contain 25:9	48:5 50:12	19:8 31:18	doing 14:24 49:8
commercially	contained 12:19	darron 2:9,9	34:24 36:1,11	dont 7:11 10:25
34:4	13:1 14:9 21:5	date 1:15 5:5	determining	15:2 16:15
commission	21:5,7	48:8 49:9	29:16	20:4 21:18
50:17	container 42:3	50:12	device 44:15	22:19 23:1,17
communicated	containing	dated 48:23	diameter 31:19	27:9 33:24
10:12	32:21	david 3:8 6:2	37:19,21 38:6	34:7 35:19
companies 8:19	contains 43:12	day 7:7 50:16	38:6,16,17	39:3 41:12
16:19,23 19:20	contaminants	days 49:15	39:8 40:8	doorstep 12:8
company 9:20	14:21	deal 23:11	diameters 30:8	double 11:12
24:10,12	contaminated	deemed 49:18	40:5	dozens 16:25
compare 24:3	22:23 23:5	defendant 2:24	didnt 8:22 13:12	dr 5:11
25:8 31:19	24:8	defendants 1:7	difference 32:3	dramatic 27:1
35:3,6 36:19	contents 21:6	define 28:22	36:23	32:3
38:24	coroner 19:2	29:22 30:9	differences	duly 5:18 48:5
compared 14:18	coroners 19:1	37:2 44:20	36:25	dust 11:20 20:14
23:25 32:2,4	correct 50:5	46:15,16	different 17:5	21:11,19,20
compares 23:23	corrections 49:4	defining 31:25	29:1,10 39:1	22:17 23:24
24:4	49:7 50:6	definition 25:7	40:17,19 41:1	25:4 37:9,10
comparing	correctly 46:21	35:12	diffraction 14:1	41:23,25 42:6
		delivery 15:10		

42:7,10,12,19 43:13,22 44:4 44:6,13 dusts 20:18 21:18 25:8 44:1	ethan 2:11,11 exact 12:24 examination 5:23 41:15 48:5 examinations 4:4 examine 7:6 11:21 12:17 19:3 41:20 44:25 examining 18:21 41:16 example 16:11 21:8 23:21 26:20 32:1 46:20 examples 38:1 exhibit 40:10,13 exhibits 4:7,10 experience 45:24 expertise 46:19 expires 50:17 explain 13:7 22:24 explanation 23:16 exponent 9:18 9:19 expose 21:10 exposure 18:23 19:8 26:10 extensively 26:20,22	favorable 16:16 feel 45:9 fiber 9:12 28:25 35:17 36:2,7 37:11 38:7 45:14,19,19 46:15,17 fibers 29:2 30:6 31:20 32:6 35:3,20 36:3 38:3,4 39:4,15 40:4 41:4 44:10,19,21,21 45:15 fibrous 24:4 29:9 30:4 32:21 42:10,11 42:12 figure 12:25 files 18:1 film 44:6,7 45:1 filter 43:15,16 43:19,20,22 44:3,5,5 financially 48:13 find 13:13 14:20 24:4 39:3 42:8 46:7 fine 42:24 44:18 44:21 firm 2:3,7,15 3:7 3:7 firms 9:11 first 5:18 7:5 8:3 fishing 17:14 five 10:1,11 floor 2:12 fm 2:4 follows 5:21 foregoing 48:7 50:4 forgot 8:1 form 24:16 25:10 28:4 30:19 33:24 34:21 46:11	50:6 formed 30:1 forms 24:5 25:5 forth 48:9 found 15:13 23:5 foundation 27:18,22 fred 5:11 frederick 1:12 5:17 6:2 48:5 50:12 further 48:7,10 fuss 19:24 20:6 46:8 fussing 20:22	47:17 golkow 1:22,23 3:12 5:4 good 15:1,10,16 20:12,16 21:21 21:25 22:4 41:2 45:10 gotcha 20:5 goudie 10:16,18 10:18 government 8:4 grab 43:14 gram 42:24 grandchildren 22:8 grow 30:23 31:11 grown 30:16
E				H
e 1:3 2:1,1,15 3:11,11 eaglepicher 8:19 19:19 east 2:12 easy 7:10 45:12 eat 30:22 egilman 3:8 electron 14:1 44:22 element 45:1 eliminate 16:15 ella 3:8 embedded 44:7 employee 48:11 48:12 employing 27:1 engineer 15:23 15:24 16:2 45:18 england 7:12 entire 10:23 45:1 entirely 21:3 entity 26:8 entrap 42:9,9 equally 30:7 errata 4:14 49:6 49:9,11,14 50:7 51:1 error 42:14,16 46:9,13 esq 2:3,8,9,10,11 2:15,20,21 3:1 essentially 26:18 establish 41:4 44:9 estimate 18:22 et 1:6 9:12 19:9 43:12	F fact 13:6 29:11 33:24 34:11 fail 49:17 fair 18:5 fairly 28:22 familiar 27:19 47:7 fan 6:11 far 8:25 27:14 28:8,11 fassler 3:8	g 3:11 gardener 17:11 general 17:24 29:3 30:20 generated 21:11 gent 11:10 12:9 geologic 23:16 geologically 22:24 23:15 georgia 3:3 getting 17:19 38:10 42:20 give 5:25 6:22 7:21 19:16 31:10 38:1 given 14:11,12 14:15 50:5 giving 19:25 go 7:5 8:16 17:9 17:12,13 18:17 26:18 30:24 35:23 43:7 47:13 going 7:1,3,25 10:24 19:23 22:16 24:19 31:16 32:16 33:15 35:23 38:13 40:22 42:18 43:10	h 3:11 hand 23:4 hands 42:2 handwritten 4:9 harmful 18:24 20:14,19 havent 18:8 20:25 heard 15:9 hearing 32:14 heart 23:4 held 1:12 5:7 help 33:2 henry 3:11 5:3 hereinbefore 48:9 heres 33:11 herrington 1:13 2:20 hes 19:25 20:1 38:9 high 35:22 hildick 11:4,4 hildicksmith 10:19 11:5 hired 11:15 16:23 19:15 hobbies 17:8	

Fred Pooley 1/31/18

11. J & J came to Pooley abt sample
12. analysis in late 1960s (Roll),
13. Take samples from Vermont
15. Pooley's an engineer
36. to assess if a tremolite particle is AFM
compare it to commercial amphiboles
44. TEM for abt. analysis of sample
47. X-ray diffraction very crude in comp.
to TEM for asbestos analysis
of airborne dust samples

(X)

tremolite

? Is it asbestiform?

Answer: Is it similar in dimensions to commercial ~~tremolite?~~ asbestos?

Average Amosite or crocidolite

Length	: Aust. crocidolite	S. Africa same length larger diam.
Diameter	: 1-30 μ (Length) .15 to .05 μ (Diam.)	

American
Calidria

< 5 μ length
.1 - .2 μ diam.

