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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

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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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VIDEOGRAPHER:
HENRY MARTE,
Golkow Litigation Services

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VIDEOGRAPHER: All right. We are now on the record. My name is Henry Marte. I'm a videographer for Golkow Litigation Services.

Today's date is January 31, 2018, and the time is 9:33 a.m. This videotaped deposition is being held at 51 West 52nd Street, New York, New York, in the matter of Ratcliff versus Borgwarner Morse Tec, LLC. The deponent today is Dr. Fred Pooley.

All appearances will be noted on the stenographic record.

Will the court reporter please administer the oath to the witness.

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,

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please?
A. Frederick David Pooley.
Q. All right. And do you still live in Wales?
A. Yeah.
Q. Cardiff?
A. Yes.
Q. You know the TARDIS lands there a bunch. Have you ever noticed that?
A. The --
Q. You're not a Doctor Who fan, are you?
A. Yes. There's a studio in Cardiff, yeah, manufacture.
Q. Yeah.
All right. We've got a whole bunch of people in here. Man, I've got like a boatload. I think we could start military conflict with as many as we've got. They're mainly here to watch Peter Bicks, but they also wanted to meet you. So thank you for your time to give your deposition today.
Okay?
A. No problem.
Q. My name is Mark Lanier. I'm

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going to ask you a set of questions today that just are to try and get me some information because tomorrow we're going to take a trial deposition of you. Mr. Bicks will go first tomorrow and do his direct, and then I'll cross examine you tomorrow. So tomorrow is the more intense day.
A. Okay.
Q. Okay? Today is just like pfft. Okay. These are easy. These are, I'd say softballs, but you-all don't play that in England, do you?
A. No.
Q. All right. How many years have you been testifying now?
A. 50, approximately.
Q. How much money do you think you've made over those 50 years?
A. I probably averaged about $20,000 a year.
Q. And can you give me to the best of your memory a list of the clients you've worked for?
And I know that's taxing, and I'm not going to get you tomorrow with, ah,

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you forgot this one. Okay. Just to the best of your memory.
A. My first trial in the US was -- I represented the government, I reckon. The judge -- the courts. So --
Q. Yeah.
That's the only time you've done that as a court witness, right?
A. Yes.
Q. In the US?
A. Yeah.
Q. Yeah.
Nobody used you again after that, did they?
A. Nope.
Q. Go ahead.
What else?
A. Johns Manville. A lot of small companies. Eagle-Picher. All cases relating basically to use of crocidolite in products.
Q. Yeah, you were big on saying that chrysotile didn't cause meso, weren't you?
A. Yes, I believe it's not a very important mineral as far as the cause of

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mesothelioma.
Q. Yeah. Now just -- yeah, well, we'll get into that more tomorrow.
Any other clients stand out in your mind?
Any more you can remember?
A. Well, there are clients in a sense who I represented in a legal sense, you know, in court or depositions, but I have -- I perform a lot of investigations, consultancy via law firms, you know, tissue specimens and, et cetera, lung fiber burdens, and I never know who their client is in those situations.
Q. Okay. Have you done work with Dennis Paustenbach before?
A. Not that I can remember, no.
Q. Exponent?
A. Exponent?
Q. Yeah. It's a company that does litigations, support litigation services.
A. No.
Q. How long have you worked for Johnson & Johnson?
A. Oh, I consulted with them over

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the five, six-year period in the 1970s.
Q. And how would you describe your jobs or job with Johnson & Johnson, what your task was, what you did?
A. I was a consultant to them based upon the mineralogy of their talc product.
Q. Who did you report to?
A. There were -- it was to their main lab in New Brunswick, and there were about five or six individuals there who I communicated with.
Q. Can you remember any of their names?
A. Yeah. One called Tom Shelley, Goudie.
Q. I'm sorry, that last name was?
A. Goudie, G-o-u-d-i-e. Hildick-Smith.
Q. Can you spell that? We've got a court reporter. Her name is Carrie Campbell. She's probably the best in the entire world, but she doesn't know how to spell this stuff, and she's going to spend an hour looking it up if we don't do

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it for her now. So how do we spell that last name?
A. Hildick, H-i-l-d-i-c-k, Hildick-Smith.
Q. All right. Anybody else you can remember?
A. There were a few people in a lab there that I sort of have contact with, a gent called Rolle, Bob Rolle.
Q. Rolle, R-o-l-l-y?
A. Double L -- no, R-o-l-l-e.
Q. All right. Anybody else?
A. Not that I can.
Q. And who hired you to do this consulting work for J&J?
A. They turned up at my -- some individuals turned up at my lab in the late '60s and just asked me whether I would -- you know, did I look at mineral powders and dust particles and would I like to examine a sample or two for them.
Q. Were you already involved in asbestos work at the time?
A. Well, yes. Involved with

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asbestos work from roughly about 19 -- 1996 onwards.
Q. You said '96. You meant '66?
A. '66, sorry.
Q. Not a problem. Peter and I both jumped in on that one. So do you remember who showed up at your doorstep?
A. Yes. It was this gent Rolle from their analytical lab in New Brunswick.
Q. All right. And had he warned you he was coming, or was it a cold call?
A. No, it was a call, you know, to see was I in such-such, do you mind if he came along. And he discussed...
Q. And the task that he gave you was to examine what?
A. He just wanted to know what the samples contained.
Q. Did he bring the samples with him?
A. Yes, he brought I think two samples at the time. I can't remember the exact -- but it was a sample anyway.
Q. And how did you figure out what

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they contained? Do you remember what you did?
A. Oh, he did mention they were talc, you know, based materials.
Q. Yeah.
A. Yeah. And, in fact, he did explain to me that he was from J&J and, you know, they use a lot of mineral powder. He just wanted this one.
Q. And did he tell you which talc mine it came from or anything like that?
A. At the time, no, he didn't.
Q. Did you subsequently find out?
A. Yes. I believe it was from the Vermont mine, the initial sample.
Q. I'm sorry?
A. The Vermont mine.
Q. Vermont.
A. Yeah.
Q. Yeah. Okay. And did you analyze that talc?
A. Yes, I produced a result.
Q. What method did you use?
A. At that time it was X-ray

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diffraction and microscopy, electron microscopy.
Q. Do you remember -- by the way, have you looked at those test results recently?
Have you gone back and looked at your notes or anything?
A. Yeah. Well, those test results are actually contained in a report which I've --
Q. Given to Peter?
A. Given to Peter, yeah.
MR. BICKS: And we gave to you.
THE WITNESS: Yeah. Because the same sample was given to about ten other consultants to look at. But it was their way of sort of seeing how people compared.
QUESTIONS BY MR. LANIER:
Q. Okay. Did you find any contaminants in the talc?
A. I would have to look at my report.
Q. And all I'm doing right now, I'm just checking your memory. I'm seeing if

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you've looked at it and how good you got it.
Don't worry about it.
A. It was mainly talc.
Q. Yeah.
A. With a few impurities.
Q. With a few what?
A. Impurities.
Q. Impurities.
I've heard it said that talc is a good delivery system for impurities.
Would you agree with that?
A. Talc is talc. I mean, you know, it may be found and associated with other mineral particles, but talc particles themselves are -- other than -- I'm trying -- it's very good at absorbing organics, that's why, you know, the perfumes in talc stick to the particles and so you have a pleasant odor if you throw the powder around.
Q. Okay. Do you remember -- well, let me ask you this: You are a scientist of sorts, right?
A. I'm basically an engineer.
Q. All right. An engineer?
A. Yes.

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Q. And you would agree with me as an engineer precision is important, isn't it?
A. Yeah. Yes, indeed.
Q. And not only is precision important, but being thorough and complete is important, too, right?
A. Yes.
Q. And it's important that you report things accurately, true?
A. Yes. As best you can, yes.
Q. So if you do, for example, 15 samples and you test 15 samples, you would want to report on 15 samples, right?
A. Yes.
Q. Okay. You don't eliminate those things that aren't favorable; you tell the truth, the whole truth, right?
A. Right.
Q. Okay. How many companies would you say you've tested materials for in your life? Hundreds?
A. Hundreds.
Q. How many companies have hired you to test talc?
A. That would be dozens.

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Q. How many mines of -- talc mines would you say have sourced the material you've tested?
In other words, how many different mines have you tested?
A. Probably six, six or seven. Six.
Q. What do you do for hobbies?
A. I go to work.
Q. You sound like us.
A. No. I'm a gardener, and I sail and probably go to work.
Q. Yeah. All right. Ever go fishing?
A. No.
Q. No. Okay.
A. Only off the boat if I'm sailing.
Q. Okay. Are you getting paid for your time for being here?
A. Yes.
Q. What do you charge?
A. For the deposition, $500 an hour, and for my general time, $250 an hour.
Q. Do you have any active

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

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

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opinion testimony. He's here as a witness to talk about the work that he did. But you asked him opinions, so we don't --
MR. LANIER: I gotcha.
MR. BICKS: -- fuss around with that.
THE WITNESS: No.
QUESTIONS BY MR. LANIER:
Q. Okay. Is it okay to have infants breathe tremolite?
Is that a good thing?
A. No, I wouldn't have thought so, no. Any dust is, you know, harmful.
Q. But in terms of the amphiboles, do you believe it's a good thing to have infants breathe any of the amphiboles?
A. As I said to you, all dusts are harmful. If you inhale enough of them and they accumulate in the lungs, they can cause problems, yeah.
Q. Right, and I'm not fussing that.
But wouldn't you testify and haven't you testified that it's worse to

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breathe tremolite than it is to breathe talc, or is it the same in your mind?
A. Well, it depends entirely on the characteristics of the talc, which is contained -- if it's contained -- the tremolite, rather, the contents of the tremolite if it's contained in the talc.
For example, counter powder, the majority of particles in a counter talc are nonrespirable. So you may expose somebody to a dust cloud generated from a product, but it's only a very small proportion of those particles, what we would call inhalable, respirable, and unlikely to settle in the lungs and subsequently cause a problem.
Q. Okay. So in that sense -- don't answer for all dusts, but answer specifically for asbestos dust.
The amphophile asbestos dust, is it a good thing to have infants breathe amphophile asbestos like tremolite or anthophyllite?
A. On a regular basis, no.
Q. At all? Is it ever a good

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thing?
A. It's a question of magnitude.
Q. And that wasn't my question.
Is it ever a good thing?
A. No.
Q. Okay. Thank you.
You have children? You have grandchildren?
A. Sure.
Q. You never purposefully had any of them breathe amphophile asbestos, did you?
A. I have no idea.
Q. You sure wouldn't have done it on purpose, would you?
A. No, but it's a natural-occurring mineral and you're going to run into some amphophile dust somewhere, that's...
Q. But you sure don't want to just bring it in voluntarily, do you?
A. Oh, no. No. No.
Q. All right. Thank you.
Why is talc contaminated with asbestos? Geologically, explain that, please.

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

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sample of asbestos. And there are very few commercial samples of tremolite asbestos to actually compare it with. So one really compares fibrous particles you find in samples with the commercial forms of the amphophiles.
Q. So your testimony is that talc mines are not contaminated with asbestos?
A. That's right.
Q. Okay. If a company is making a product that's got asbestos in it or might have asbestos in it, should a company warn the people who are using the product in your mind?
MR. BICKS: Objection to the form.
THE WITNESS: Well, if there was talc with asbestos in it and somebody was going to put it on the market, it's obvious that you -- you would require some warning.
QUESTIONS BY MR. LANIER:
Q. All right. Do you agree that products should have zero tolerance for asbestos in them, or is it okay for products

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to have asbestos in them?
A. It really depends on how you use the word "asbestos." You know, if you're using it to describe dust particles, which are similar in morphology to commercial forms of asbestos, then obviously it's -- you know, it's logical to use that definition.
But to compare it with dusts which contain only the mineral and not the form of particles, it's, you know...
Q. Well, let me ask it this way: Can you tell us if there is a safe level for amphophiles, asbestiform amphophiles?
A. Asbestiform? Asbestos amphophiles?
Q. Yeah.
A. I would say yes.
Q. There is a safe level?
A. Yes. Depending upon the mineral.
Q. Wow.
Do you have any -- what independent scientific organizations back up that opinion that there's a safe level that's not carcinogenic?

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

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employing it and there has been no dramatic biological response.
Q. Okay. I'm not sure if you understood what I was asking.
I'm talking about what organization says that there is some safe level, some magic cancer threshold level, for asbestiform amphophiles?
A. Oh, I don't think any organization. There are no organizations, we shall say that.
Q. Okay. Thank you.
A. Yeah. They are very few and far between, the organizations I'm saying.
Q. Okay. Speaking of organizations, did you ever do any work for or with or in conjunction with the Industrial Hygiene Foundation?
A. I'm not familiar with that title.
Q. Okay. That was -- the Industrial Hygiene Foundation was mainly in the United States and Canada, and it kind of quit its activities in the '80s or so, '70s, but it's been active since the late '30s.

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Doesn't ring a bell?
A. No.
MR. BICKS: Objection to the form.
QUESTIONS BY MR. LANIER:
Q. Okay. Do talc particles translocate in the body?
A. As far as I'm aware, no.
Q. Do asbestos particles translocate in the body?
A. As far as I'm aware, no.
They will leave the body. The vast majority of the particles you may inhale, talc or asbestos, will normally leave the body via the back of your throat when you swallow them.
Q. Huh.
What do you mean when you use the term "lathlike" or "lathlike," l-a-t-h-l-i-k-e?
A. It's a term which is often used to define an object which is fairly longer than it's wide and thinner than it's wide.
Q. So it applies to more than an asbestos fiber or something like that; it can

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apply to all sorts of different types of fibers?
A. It's a general description of --
Q. Sizing?
A. Of objects of that sort of, yeah, shape.
Q. What do you mean when you use the term "fibrous" when you're talking about different things you've analyzed?
A. It refers to the fact that when you look at the particles there appear to be quite a few -- quite a large proportion of them are longer than they wanted.
Q. Is that relevant on whether or not you're determining if they're asbestiform?
A. Well, you've got to be longer than you're wide to be asbestiform because you're comparing your particle with a commercial asbestos mineral.
Q. All right. Define for me what you mean when you talk about something being asbestiform.
A. It has a similar shape to

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particles which may be formed from commercial so-called asbestos minerals.
Q. Does that mean that it would be fibrous or lathlike?
A. There may be, yeah, some lathlike mixed with ordinary fibers which are sort of equally dimensional in terms of diameters.
Q. If you've got -- well, define for me asbestos, please.
A. I can't.
Q. Why not?
A. Well, it's one of these words that has no meaning. It's a commercial term used to indicate a material which would be used in certain situations. And as grown up as it were, it's like saying potatoes and you're not really saying which type of potato or what form of potato, sweet potato. It's a general term.
Q. Huh.
Do you eat potatoes?
A. Yeah. I grow them, yeah.
Q. Do you go like into a pub and say, "I'll have the this-and-this with a side

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of potatoes"?
A. No. A packet of crisps, they're made from potatoes.
Q. Do you ask them on your crisps what kind of potatoes they used?
A. Oh, well, crisps are normally manufactured from particular varieties of potato.
Q. A russet or what?
A. Oh, I couldn't give you the -- but they're potatoes which grow with a suitable shape to manufacture crisps.
Q. All right. Now, how do you tell if a piece of -- not a piece, a particle of tremolite is asbestiform or not?
A. Well, if you're going to say this tremolite is asbestiform, you would obviously be measuring it to determine its length and diameter and then compare those values with fibers or particles produced from commercial so-called asbestos products.
Q. When you use the word like "asbestos," though, that word by you has no meaning because I asked you what it meant.
A. Well, you're not defining the

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type of mineral. So, for example, if I compared that particle with crocidolite, there would be a dramatic difference. Okay.
If I compared that particle with, say, anthophyllite, there would be some similarity. The anthophyllite fibers are normally thicker and longer than crocidolite, which are long and thin.
Q. So is crocidolite always asbestiform?
A. No.
Q. Well, that's what I'm trying to get at is what makes it asbestiform, and what I'm hearing from you is, well, it's asbestiform if it's similar to something else that we're going to call asbestiform.
Pretend I know nothing about this. Tell me what you mean when you say asbestiform, please.
A. That you have a sample with particles -- containing particles, fibrous particles, which have dimensions which are similar to those produced from samples of commercial mineral which are used in industry and are referred to as asbestos.

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Q. So asbestiform means -- all right. And maybe it will help.
Can you see the screen down there if I write on here?
A. Sure.
Q. Okay. So I've got a piece of tremolite.
A. Sure.
Q. And so I've got a question I need to ask on that piece of tremolite, and here's my question: Is it asbestiform?
Are you with me?
A. Yeah.
Q. Now, your answer to that is going to be: Is it the same size or similar in dimensions, I think was your language, similar in dimensions to commercial tremolite.
Right? Is that the question?
A. No.
Q. Is that the answer?
A. Commercial asbestos. You're talking about asbestiform, not tremolite form. In fact, there isn't -- I don't know of any source of commercial tremolite.

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Q. I thought you told me in Turkey they mine tremolite.
A. Oh, yes.
Q. Use it commercially?
A. They have, yes.
Q. Okay. Well, then you just said I don't know of any source of commercial tremolite.
Isn't Turkey a source?
A. But it's not sold on the market as tremolite. In fact, they turn it into clay tiles.
Q. Okay. So if I want to know if that tremolite is asbestiform, I'd want to know is it similar in dimensions to commercial asbestos. And when I asked you what you mean by asbestos, you said it has no meaning.
A. That's right.
MR. BICKS: Objection to the form.
QUESTIONS BY MR. LANIER:
Q. So I'm a little bit confused on how you get to determine if tremolite is asbestiform.

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A. Well, if the particles that produced at that particular location, do they compare with fibers or particles produced from a commercial asbestos mine.
So you would have to measure the particles and compare the size distributions, simply.
Q. But let's say you've got it in tissue.
A. Yeah.
Q. You're looking at a particle in tissue. Now, you know by definition if it's in the tissue, it's been respirated; it's been --
A. Sure.
Q. So we know it's not a bundle. We know it's a single fiber, right?
A. Right.
Q. Because you don't respirate bundles; you respirate single fibers?
A. You can respirate bundles.
Q. But they lodge up so high it's not going to go down, right?
A. Right.
Q. All right. So you're saying

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that you determine if it's asbestiform by whether or not that single particle, fiber, is similar in dimensions to commercial fibers that are broken down and separated and non-bundlized?
A. Yeah, so they're airborne. Yeah, airborne commercial asbestos fiber, yes.
Q. Huh.
And so you'd be looking for on tremolite to determine if it's asbestiform, you would be looking to see is it similar in dimensions to commercial tremolite, but you've told me there is no commercial tremolite?
A. Virtually, no.
Q. So what are you comparing it to?
A. Well, you would compare your tremolite with commercial amphophile asbestos.
Q. So but there's such a difference between crocidolite and anthophyllite or amosite or --
A. Yes, there's big differences,

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but they would be the yardstick by which you would define whether or not that particle is asbestiform or not.
Q. So what dimensions will make it asbestiform?
Are there some set dimensions?
A. Yes, you can sort of -- you can look at the average dimensions of amosite, airborne dust and look at the average dimensions of crocidolite and airborne dust and you can take your fiber and look at its dimensions and you can say, "Oh, it sits within this range of dimensions."
Q. And is that a 3 to 1 ratio or is it --
A. No.
Q. What are the dimensions?
A. The dimension is a length and the diameter.
Q. All right. What is the average length range and average diameter range that makes it an amphophile -- I mean, that makes it an asbestiform?
A. It depends on the source of the amphophile.

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Q. Okay. Give me some examples.
A. If we took Australian crocidolite and you'd say that the fibers -- if the fibers were within 1 to 10 microns -- 1 to 30 microns in length and with diameter -- .15 to .06 in diameter and you had a fiber and you're comparing it, then you would say this is obviously...
MR. BICKS: I think he's getting distracted with the --
MR. LANIER: Sorry.
QUESTIONS BY MR. LANIER:
Q. Keep going. I'm listening.
My side is worried that maybe you misspoke when you said .15 to .06 microns in diameter.
A. Diameter, yeah.
Q. Okay.
A. That's Australian crocidolite, yeah.
Q. So that would tell you if you're comparing it to Australian crocidolite.
What you if you compare it instead to a South African asbestos?

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

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

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What are the different methods you can use that are acceptable and good?
A. Well, there's only one method to establish whether you have fibers which are asbestiform, and that's to use a microscopic method.
Q. But you can't look at the whole sample of talc, can you?
A. It depends how you prepare it.
Q. All right. Let's start then with preparation.
A. You don't have to look at the whole sample.
Q. All right. Tell me how to prepare the talc for examination.
A. Well, you're examining it because of its possible disease potential.
Q. Right.
So how do you prepare the talc so that you can examine it?
A. You would take a sample of the talc carefully so it's representative of the mass, and you would prepare a dust cloud from it.
Q. And how do you prepare a dust

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cloud?
A. Put some on your hands and blow or you can put it in a container and shake it.
Q. And then what do you do after you prepare a dust cloud?
A. Then you sample the dust you've created to find out whether or not you've got or managed to entrap or -- you know, entrap fibrous particles in the dust cloud or fibrous particles are carried over into the dust cloud, if there are any fibrous particles there to start with.
Q. Is that -- what is your error rate?
A. Error rate?
Q. Yeah.
In other words, if you're going to sample a dust cloud, how do you know that you're truly getting a representation of all of the minerals present or all of the particles present?
A. Well, if you start off with a fine powder and you suspend a gram or whatever of that material and then you sample

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it, it's totally mixed and there's no reason why the sample you take should not be truly representative of the cloud you've taken, otherwise you're not using the right sampling technique.
But that's -- that's the basis for all airborne test sampling. You go out and use test samplers to take a sample from the air knowing that the sample you take is going to be representative of that location or whatever it might be in terms of the particles, et cetera, it contains.
Q. When you sample the dust, how do you grab it?
A. Onto a filter.
Q. You just run a filter through the air?
A. No, pull the air through a filter.
Q. Pull the air through a filter.
And then how do you get the dust off the filter?
A. You prepare it to produce a microscopic preparation.
Q. How do you do that, though?

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A. For airborne dusts, you would use what is called the direct technique and coat the filter with carbon, which would trap all of the dust you've pulled down onto the filter, and you remove the filter and you have a carbon film with the dust particles embedded in the carbon film for you to look at. You could look at as many as you wanted and scan to establish, you know, A, have I got any fibers here or any other particles you may be looking for; and, B, what is the proportion distribution of these particles in the dust.
It's very accurate.
Q. What type of scanning device are you using at that point?
A. You use a transmission -- if you wanted -- if you're looking for fine asbestiform fibers, you've got to use a machine which would define asbestiform fibers, fine asbestiform fibers, so a transmission electron microscope.
Q. A TEM machine?
A. Yes.
Q. And then you examine with a TEM

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

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

correctly.
QUESTIONS BY MR. LANIER:
Q. How accurate is X-ray diffraction?
A. X-ray diffraction is very crude in comparison with a TEM.
Q. Are you familiar with a concentration method of testing?
A. It doesn't ring a bell.
MR. LANIER: Okay. That's all I've got. I'll see you tomorrow. Thank you.
VIDEOGRAPHER: I should go off the record, right?
MR. LANIER: Yeah.
VIDEOGRAPHER: Okay. The time is 10:21 a.m. Going off the record.
(Deposition concluded at 10:21 a.m.)

CERTIFICATE

I, CARRIE A. CAMPBELL, Registered Diplomate Reporter, Certified Realtime Reporter and Certified Shorthand Reporter, do hereby certify that prior to the commencement of the examination, Frederick Pooley, Ph.D. was duly sworn by me to testify to the truth, the whole truth and nothing but the truth.

I DO FURTHER CERTIFY that the foregoing is a verbatim transcript of the testimony as taken stenographically by and before me at the time, place and on the date hereinbefore set forth, to the best of my ability.

I DO FURTHER CERTIFY that I am neither a relative nor employee nor attorney nor counsel of any of the parties to this action, and that I am neither a relative nor employee of such attorney or counsel, and that I am not financially interested in the action.

_____
CARRIE A. CAMPBELL,
NCRA Registered Diplomate Reporter
Certified Realtime Reporter
California Certified Shorthand Reporter #13921
Missouri Certified Court Reporter #859
Illinois Certified Shorthand Reporter #084-004229
Texas Certified Shorthand Reporter #9328
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Notary Public
Dated: January 31, 2018

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Please read your deposition over carefully and make any necessary corrections. You should state the reason in the appropriate space on the errata sheet for any corrections that are made.
After doing so, please sign the errata sheet and date it. You are signing same subject to the changes you have noted on the errata sheet, which will be attached to your deposition.
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ACKNOWLEDGMENT OF DEPONENT

I,_____, do hereby certify that I have read the foregoing pages and that the same is a correct transcription of the answers given by me to the questions therein propounded, except for the corrections or changes in form or substance, if any, noted in the attached Errata Sheet.

_____
Frederick Pooley, Ph.D. DATE

Subscribed and sworn to before me this _____ day of _____, 20 ____.
My commission expires: _____

Notary Public

ERRATA

PAGE	LINE	CHANGE

LAWYER'S NOTES

PAGE	LINE	

Fred Pooley 1/31/18

11. J & J came to Pooley ab't sample
12. analysis in late 1960s (Polle),
13 Talc samples from Vermont
15 Pooley's an engineer
36 to assess if a tremolite particle is A'form
compare it to commercial amphiboles
44 TEM for asb. analysis of sample
47 X-ray diffraction very crude in comp.
to TEM for asbestos analysis
of airborne dust samples

(XI)

tremolite

? Is it asbestiform?

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

Average Amosite or crocidolite

Length : Diameter :	Aust. crocidolite	S. Africa
	1-30μ (Leng.)	same length
	.15 to .01μ (Diam)	larger diam.

American Calidria: <5μ length, .1 - .2μ diam.