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SC Court of Appeals

THE STATE OF SOUTH CAROLINA
In The Court of Appeals

APPEAL FROM SPARTANBURG COUNTY
Court of Common Pleas
D. Garrison Hill, Circuit Judge

Appellate Case No. 2016-000227
Case No. 2013-CP-42-3915

Angie Keene, Individually and as Personal Representative of the Estate of Dennis Seay, Deceased, and Linda Seay,..... Respondents,

v.

CNA Holdings, LLC..... Appellant.

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Certificate of Counsel

on the number you received so we don't have to worry about where you are. And we'll do our utmost to try to respect your time. And, please, try to respect everybody else's time as well.

All right. Yes, sir, Mr. Panatier.

MR. PANATIER: Thank you, Your Honor.

At this time, the Plaintiffs call Dr. Arnold Brody.

THE CLERK: Place your left hand on the Bible and raise your right hand.

WHEREUPON,

ARNOLD R. BRODY, Ph.D.,

after first having been duly sworn, testified as follows:

THE CLERK: Thank you.

DIRECT EXAMINATION

BY MR. PANATIER:

Q Okay. Dr. Brody, I have a starting slide here. Dr. Arnold Brody, is that you?

A That is.

Q And it says, Cell biologist and experimental pathologist. Is that, also, you?

A That is.

Q Okay. The first question is, are you a medical doctor or are you a research doctor?

A No. I'm a Ph.D., scientist, research doctor, however you want to say it.

Q And what has your -- can you tell us what cell biologist and experimental pathologist means?
A Right. So every living thing is made of cells. We need to understand how our cells function. Every disease has a target cell from which that disease develops. So cell biologists like myself focus on certain disease -- diseases, and the cells from which those diseases develop.
Pathology is the study of disease. So an experimental pathologist like myself goes through a series of experiments to understand disease.
Q Okay. And is something like asbestos something that you spent your career studying?
A Absolutely.
Q All right. Let me just --
MR. PANATIER: Your Honor, may I approach?
THE COURT: Yes, sir.
BY MR. PANATIER:
Q Here is a copy of your résumé. Is that a fair and accurate copy of your résumé?
A It is.
Q All right. Let me throw this onto the camera here. Your résumé is longer than mine.
A I'm a lot older.
Q 28 pages. All right. We're not going to sit here and read this whole thing. But some basic questions for

you.

First of all, where do you live?

A I currently live in Raleigh, North Carolina. You can see that up here.

Q Okay. And married with two kids?

A And six grandkids.

Q Okay. So, first question, did you go to college?

A Certainly.

Q Where did you go to college?

A Okay. Well, you can, actually, see up here, after high school in New Hampshire, I did a bachelor of science degree at Colorado State University, and that was the study of zoology. That's the study of animals.

Then I went to the University of Illinois where I received a Master of Science Degree in Anatomy. It's vertebrae anatomy. And that means animals with backbones like people, and rats, and dogs, and cats. And we all have very much the same kinds of function. That's where you learn -- that's where I learned how our parts fit together and function and -- muscles, bones, nerves, joints, that sort of thing.

Then I went back to Colorado to do a Ph.D. That's a Doctorate in Cell Biology that I was telling you about. But I had a specialty in what's called ultrastructural cytology. That means the study of cells using what's

called an electron microscope. So you can magnify things hundreds of thousands of times and see things that would be impossible to see with the human eye.

Q I may ask you -- I may bounce around a little bit and ask you some scientific questions. So to the extent I do that, will you keep all of your testimony to a reasonable degree of scientific certainty?

A Of course.

Q So the first question I have for you is, you said an "electron microscope." How is that different, if at all, from, say, a microscope we might have used in middle school to look at slides?

A Right. So the typical microscope that I used in school, that most people use, is called a light microscope. And what you're doing is you're using the room light or a light bulb to -- to illuminate the sample so you can see it.

Now, the waves, the light waves, are -- are rather long, rather high in light. And they don't allow you to see things that are very small. By comparison, an electron microscope uses electrons to illuminate the sample. And the wavelength of electrons is very short so that you can, actually, see things that you couldn't possibly see with a light microscope.

So they're both very valuable. I mean, I use light

microscopes all the time. But it depends on what you need to see. If you need to see the smallest asbestos fibers, for example, you have to use an electron microscope.

Q So is it fair to say that, depending on the tool, if you had a sample of asbestos that you were looking at, in a light microscope, you may only see some of it where you could see more of it under an electron microscope? Is that fair?

A Yeah. I mean, there are no fibers that you cannot see with an electron microscope.

Q All right. Now, in 1969, you get your Ph.D. At some point, did you start looking at asbestos and its effect on the body?

A Yeah, I did. I -- first, I did a postdoctoral fellowship at Ohio State University. A postdoc is where you find out if you're suited to be a scientist, if you have that kind of patience.

And then I started as an assistant professor -- that's a beginning professor -- at the University of Vermont in the pathology department. And it was during that time in 1974 that I started my interest in asbestos disease.

Q All right. And so, as a scientist, how did you, actually, start to research it or study it?

A So, actually, that's an interesting story. Because

it's one of those things where you never expect. But it was a cold Saturday morning in Vermont. If you know anything about Vermont, it has its own special qualities when you say cold. Okay.

So it was a cold winter morning. And the chairman of the pathology department called me on the phone. And my little five-year-old is running around. As I say, it's cold out. And he said, Dr. Chris Wagner is here. Now, that's W-A-G-N-E-R. It looks like Wagner. But he's from South Africa. He pronounces his name Wagner.

Dr. Wagner had discovered in 1960 that asbestos causes this cancer mesothelioma. And there he was at the department. And the department chairman was asking me if I want to talk to him. Well, this wasn't really a question. This was get down here, get down here now.

So I jumped on my bicycle. And I was down there in just a few minutes. And I got to sit with Dr. Wagner. And he was explaining to me the kind of work he was doing with human lungs, and patients, and with what he called an animal model. He -- he showed that if you expose rats to asbestos, they get all the diseases that people do, asbestosis, scarring of the lung, lung cancer, and mesothelioma.

Now, this -- like with any human disease, we use model systems to tell us about the human disease. And he

had developed this asbestos model that -- and he invited me to come and work with him in Wales, in the United Kingdom. And this was a fantastic opportunity for a young scientist. And that's where it started.

Q And so throughout your career, have you used animal models to study the effects of asbestos, and other particulate, or other toxins on the cells, and how it affects the body?

A Yeah, of course. I and thousands of other scientists around the world, depending on the disease, use these model systems. Sure.

Q Have you been a teacher? Have you taught about your research, the effect of asbestos and other toxins on the cells?

A Absolutely. Since I -- actually, my graduate career at the University of Illinois started with what's called a teaching assistantship. I -- that's how I got to go to school. I was teaching the undergraduate classes, and have been teaching in medical schools ever since.

Q All right. And, at some point, did you become a professor anywhere?

A I did.

Q Okay. Where?

A Okay. So after I was at Vermont as an assistant professor, I went to the National Institute of

Environmental Health Sciences, as you can see here. The National Institute of Environmental Health Sciences. That's one of the National Institutes of Health. I was the head of the pulmonary. That's lung pathology, remember, the study of disease.

So I was the head of the lung pathology group there for 15 years. And then, in 1993, I was offered a position as full professor in the department of pathology at Tulane University Medical School in New Orleans. I was the director of lung biology.

And, actually, if we went down to 1999, you would see, '99, I was promoted to vice chairman in the pathology department in the Tulane medical school.

Q Okay. So, at some point, were you -- you were teaching undergrads. Were you ever teaching grad students and other people who were trying to get advanced degrees?

A Yeah, absolutely. Throughout my career, and particularly at Tulane, I was -- gave regular lectures in the medical school to the medical students. I mean, it's not at all unusual for Ph.D.'s like myself to be preparing the medical students in the basic sciences, physiology, anatomy, biochemistry, the things they need to understand before they go into their medical school clinical sciences.

Q And then in 2006 to 2011, it looks like you moved to

North Carolina State. What happened there?

A Well, you probably heard about this little storm called Katrina that came blasting through New Orleans. So you can see I was in, actually, for a year -- Katrina came through in 2005. And I stayed at Tulane through 2006.

But while Tulane and New Orleans was closed, I have colleagues at North Carolina State University in Raleigh. And they offered me an opportunity to use a computer and a desk. And then the dean saw -- of the school there saw the funding that I have from the National Institutes of Health, which is an attractive thing to have. And he offered me a position there.

So I finished my last five years of my career as a professor in the department of molecular and biomedical sciences at North Carolina State. I retired in 2011. And then in 2012, I was honored with the position of professor emeritus in the pathology department at Tulane. And that's my current academic position.

Q All right. And what does "emeritus" means?

A So emeritus, from the Latin, means "from merit," because of all I had accomplished at Tulane. And, as I say, I was honored with this position. It's -- I don't get a salary. I -- but I have the opportunity to be a faculty member of the department. And I currently am working with professors, young people that I hired when I

was there.

So my research program continues as we speak.

Q Now, through this time, have you, also -- during the whole time that you were teaching and researching, have you, also, come into courtrooms like this and talked to juries about asbestos?

A Many times, sir.

Q Is your testimony any different than what you, actually, teach on the subject of asbestos with the caveat that maybe it's a little bit more basic initially? Is that fair?

A Yeah, sure. I mean, I use a different vocabulary for the medical students and my colleagues than I do for when I talk to a jury, but the message is exactly the same. Some of the slides that you've asked me to bring here today I use when I teach in medical school.

Q Okay. A few more questions here. There is a section -- have you been invited to speak all over the world on asbestos?

A Many times.

Q Okay. Let's see if I can get -- okay. So here's a -- so editorial boards. Now, what does that mean?

A Well, these are the kinds of journals that we publish our work. So a scientist, in order -- I mean, the goal of -- of basic science is to answer questions where the

answers are not available in the open medical literature.

So scientists like myself publish our work in what we call the open medical literature so that other scientists can see what we're doing. Also, that's the way I get to compete for the research dollars. I don't know if you want to talk about that, but -- shall I explain?

Q Yeah. No, explain that. When you're publishing, you just said you're competing for research dollars. What does that mean?

A Yeah. So, I mean, the universities hire professors. And they -- sometimes, they give you a salary, sometimes they don't. But they give you a place to do your work. And it's the requirement of the scientist to attract the funding to support the graduate students, and the young faculty, and pay for the supplies and equipment. It's a very expensive proposition.

And so how do we do that? Well, we have to compete. The National Institutes of Health is the major funding body for science and medicine across the country. It's made up of a number of different institutes like the National Cancer Institute, National Heart, Lung, and Blood Institute.

So I compete with all the other scientists across the country, whether they're from South Carolina, or Florida, or California, or New York. And we submit applications.

And they're reviewed. And about 10 to 15 percent of those applications get funded.

So that's what I mean by compete. And it's a very competitive environment. And my work has been supported by the National Institutes of Health without interruption through -- throughout my career.

So in order to show what I've done, I publish in journals like this. And I, also, sit on the editorial boards of these journals. And that's what that is as well.

Q Okay. And then this is getting to the issue of publications. It says, "review manuscripts for." And there's something called -- and I think it's on the very next page. Peer-reviewed publications --

A Right.

Q -- right? So does that have to -- does that tie in with "review manuscripts for"?

A Yes, exactly.

Q Okay. And so can you explain, what is the peer-review process? What does that mean?

A All right. So if I do a series of experiments in my laboratory and I want that work to be -- to appear in one of these journals like the ones that are listed here or the ones that are up here, I send a -- I write up the manuscript with an introduction, an explanation of what we

did, all the results, discussion. And I submit that paper to the editor of one of these journals.

The editor then sends that paper out to two, or three, or four of my peers, scientists like myself, who anonymously review my work. They then have a couple of weeks to write a report back to the editor. And they may ask for clarification. They may ask for more experiments. They may complain about it not being clear enough. They may be happy with it.

The reports go back to the editor. The editor sends this to me. Then I have an opportunity to respond to my peers. I can revise the manuscript. I can do additional experiments, write it back up, send it out again. This is a several-months-long process, which, eventually, ends up in one of the 150-some-odd peer-reviewed papers that I've listed in my CV here.

And that's the process of peer review.

Q Okay. So you have both been on the side of someone submitting your work to peer review to be published, and you have, also, served as someone who reviews other scientists work?

A I do that regularly.

Q So you said you had 150 peer-reviewed publications; is that right?

A I think it's 153, at last count.

Q Give or take. Approximately how many of those are on the subject of asbestos?

A About a hundred or so of them deal directly with asbestos. I mean, you just opened randomly to a page here. And you can see that here's a paper that we used looking at this kind of asbestos called chrysotile. We looked at a whole variety of different things related to the injury of lung cells.

So either they deal with asbestos, about a hundred or so of them, and the others, most of them deal with lung injury and how normal lung cells work.

Q All right. And then just flipping through here. Then there's a section called chapters and proceedings. So you have some book chapters?

A Right. So these are invited. So these are separated out from the peer-reviewed papers. Because the papers in this group are not reviewed by my peers. They're invited.

So if somebody is writing a book, for example, like Reviews in Environmental Control, they might ask me to write a chapter in that book.

Q I see the first one, actually, is edited by J.C. Wagner. Is that the fellow that you mentioned earlier?

A Exactly.

Q Okay. And --

A I think there are 55 of those.

Q You're right. It looks like 55 of those. And then one book?
A And a book. That's right.
Q The Science Class You Wish You Had?
A Yes.
Q So you think people, actually, wish they had another science class?
A Well, if they don't, they should. And if they don't want to go back to school, they can read that book.
Q All right. Oh, so, obviously, you are charging for your time today; is that fair?
A True.
Q What is your rate that you charge?
A $550 per hour.
Q And over the years, how long have you -- at the same time doing your research and all of that, but how long have you been coming into courtrooms and talking to juries?
A Okay. So I told you my interest in asbestos disease started in '74. 15 years later, in 1989, I was asked to come into a courtroom for the first time. So I had one case in '89, and a few cases in the early '90s. Since I've retired, I've been busier doing this sort of consulting thing, but since 1989.
Q And it would be fair to say that over that time

you've been paid in the millions? Is that fair?
A I have. That's correct.
Q Now, have you, also, testified for defendants, and testified to the exact same issues you're going to testify today?
A Yeah, exactly. If a company would like to hear this exact same testimony that you're going to ask me to give here today, and I have the time, I can do that. Sure.
Q Okay. And have you done it for John Crane?
A I have.
Q Okay. Let's start with a basic issue. You're the first expert that is going to talk to us in this case. What is asbestos? Is that something you're prepared to talk about?
A Sure.
Q Is that something that you -- have you utilized asbestos in your own research extensively?
A Yeah.
Q Okay. So what is it?
A Well, asbestos is a naturally occurring mineral. It's been mined in many different places around the world, including Vermont, and a lot of it Canada, Australia, South Africa, Russia. There's one kind that's still mined in a couple of places today. But it, at one time, was mined in the thousands of tons.

Q Okay. I've got this picture that I showed the jury in opening, the different types of asbestos. Generally speaking, do these fit into any categories?

A Yeah, sure. So there are two -- let's see. You don't have it up there. Okay. There are two kinds of minerals, basic kinds of minerals. One of them is called amphibole, A-M-P-H-I-B-O-L-E.

So amphibole minerals have a number of different asbestos varieties in that amphibole mineral. And that's what anthophyllite, and tremolite, and amosite, crocidolite, they're different kinds of amphibole minerals.

And you can see, when they're mined, they have a certain color to them. So, for example, crocidolite is called blue asbestos, because, actually, the rock has a bluish character to it. So it's called blue asbestos. Amosite has kind of a brown color to it. And so it's called brown asbestos.

Now, there's another mineral type, and that's call serpentine, like the serpent, ending in I-N-E. So serpentine asbestos -- serpentine mineral has one asbestos type. And that's called chrysotile. And you can see that up here.

Now, of all these asbestos varieties, one of them has been used about 95 percent of the time in the world's use,

and that's chrysotile. So chrysotile is about 95 percent of the world's use. And these different amphiboles, crocidolite and amosite, make up about the other five percent. Anthophyllite and tremolite are found, but in much smaller percentages, and even hard to categorize that way.

Q Generally speaking, are anthophyllite and tremolite, typically, regarded as a contaminate of chrysotile?

A Yeah. I mean, it's normal. It's not like somebody put it in there and contaminated it. It's part of what can be mined, along with the chrysotile. It's imbedded in the ore where you can get anthophyllite and, particularly, tremolite.

Q So I'm just going to write, part of ore.

Have you looked at different types of asbestos and tried to figure out how they get into the body, and how they affect the cells in animals and humans?

A Well, that's part of the research. I mean, when I started with Dr. Wagner, he knew and we knew, science knew, that asbestos caused these diseases that we talked about, asbestosis, lung cancer, and mesothelioma. But when I asked the question, well, the lung is a very complex organ, where do those fibers go when they're inhaled? Okay. They go in the lung, but that's not good enough.

If I went to the library and I asked, well, where in the lung do they go? And then if I asked, well, once they get into the lung, how do they injure the lung cells to produce the diseases we know they produce? Those answers were not available.

So that's why I started doing my own experiments to answer questions like you just asked. Well, did they get into the lung? Where did they go? How did they injure?

And so that's the way we started with what sounded like sort of simple questions. And, today, we're at what's called the molecular level, the genetic level. All of the asbestos diseases are genetic diseases. They require either an activation or damage of certain sets of genes. And that's where science is today in a lot of different aspects.

Q So when you began your research, you weren't trying to figure out if asbestos could cause the diseases. That was already established.

A Exactly.

Q And throughout the period of time that you've done this research, has it ever been shown that any type of asbestos can't cause these diseases?

A No. It's the opposite. All of the asbestos varieties that you see here cause all of the asbestos diseases. That is a consensus in science. You can find a

few people who will tell you that chrysotile does not cause mesothelioma. But that's a very few and, clearly, not in the consensus.

Q Okay. So let me skip ahead. This is a slide that you have provided and that you have used throughout the years; correct?

A It is.

Q And, in fact, I think the next group of slides are your slides that you provided.

MR. PANATIER: And, Your Honor, can I ask that the witness just be able to step down so he can make reference to the slides?

THE COURT: Certainly.

BY MR. PANATIER:

Q I've got a little remote control. That moves forward.

A Okay.

Q You've got your own laser --

A I do. My laser is bigger --

Q And before I ask you the next question -- okay. We're going to get into a laser -- before I ask you the next question --

MR. PANATIER: Your Honor, at this time, we would tender Dr. Brody as an expert in cell biology and experimental pathology on the subject of asbestos and

asbestos diseases.

THE COURT: Any voir dire?

MR. TIVIN: No objection.

MR. YOUNG: No objection, Your Honor.

THE COURT: All right. Ladies and gentlemen, when a witness testifies, typically, they are only limited to testify about things they personally observed through one of their senses. There is an exception under the law for people who have been qualified as expert witnesses, who are witnesses who by reason of their education, training, or experience have achieved some expertise in their field.

These witnesses, unlike any other witnesses, are allowed to give their opinions as to things they have observed or had known to them -- made known to them.

So that is the difference between an expert witness and any other witness.

But you, the jury, are the sole judge of the credibility of all the witnesses.

So, yes, sir, you may continue.

BY MR. PANATIER:

Q So this picture here, what is your purpose in showing us this picture?

MR. PANATIER: Some of these pictures will be of intricate parts of cells. We want to just lower the lights a little bit.

BY MR. PANATIER:

Q Okay. So go ahead. So what's your purpose in showing this picture?

A Okay. Well, I know you know where your lungs are. But I just want to remind you that when you take a breath, the air -- there we go. Oh, that's great.

Thank you. Thank you.

So, when you take a breath, the air comes down this tube that we call the trachea or a windpipe. You can feel the top of that in your Adam's apple right here. That's the top of your trachea. And you take a breath. And the air comes down through this series of tubes that we call conducting airways, because they conduct air down into the lung.

And I, also, use this diagram as a map. Because it can help us understand where all the different asbestos diseases develop. So, for example, lung cancer is caused by asbestos, typically, in concert with cigarette use. And that develops in the walls of these tubes. And among the tubes is the -- develops the disease asbestosis. That's scar tissue in the lung from inhaling asbestos.

Now, you see this black line that runs around the outside of the lungs. That black line represents the pleura, P-L-E-U-R-A. That's a very thin -- I mean, Saran-wrap thin membrane that wraps around the outside of

the lungs, makes the lungs airtight like balloons. If you hear somebody has a collapsed lung, it's, typically, because there's been a hole, or a tear, or damage to that very thin pleura. And the lung collapses like a balloon would.

Around the outside of the pleura is a single layer of cells called mesothelial cells. And if somebody has a cancer of the mesothelial cells, it's called mesothelioma.

Now, I use diagrams a lot. It's helpful to use diagrams. But we need to be able to see what these things, actually, look like.

You asked me what an electron microscope is. So I'm going to show you a picture of an electron microscope. This is a microscope that I had for a very long time, you can probably tell. And this microscope, actually, was a victim of Hurricane Katrina. I lost this -- I had this microscope for 15 or 20 years. They're very expensive, hundreds of thousands of dollars, and last for many years.

I can take a piece of tissue as small as a period at the end of a sentence or as big as this device I have in my hand, put that tissue into this door in front of me. And the column of the microscope has a vacuum in it. It's evacuated inside. I put the tissue into the vacuum.

At the top of the column, there is an electron gun. And that generates electrons which pass through that

vacuum, strike the sample that I've put in the column. The electrons pass over the surface of the sample, and recreate in the finest molecular detail the surface of that sample and make a -- actually, you can get a 3D perspective out of it that I'm going to show you in a second.

And then we collect those electrons. And in front of me then appears that image that's created by the electrons. And then just off of the screen, there is a camera. So I can take a permanent image of whatever it is we're looking at.

Q And are we -- are you going to show us some actual pictures you've taken, as well as other researchers?

A Yes. All the pictures of the lungs that I'm going to show you and the asbestos, those are pictures that I've taken over the years in my laboratory. That's right.

So if I cut a piece of tissue out of the lung, for example, you'll see the conducting airways going up into the lung. You'll see the pleura running around the surface.

So I'm going to cut this out. I'm going to put it into the microscope. I'm going to take a picture. And here is that section of the lung. You can see the conducting airways going up into the lung. So you take a breath and the air -- the room air goes up and fills all

these little airspaces, hundreds of billions of them that we have in our lungs.

Now, you can, also, see how thin the pleura is. So when I cut across the edge of the pleura, you can see how thin that is. Here's the outside lining of the pleura. And that's where mesothelial cells are, on the outside lining of the pleura.

So the target cell for mesothelioma resides on the outside lining of the pleura. The asbestos fibers, most of them, land in the structure of the lung. And I'm going to show you how they get transported to the pleura. Because the fiber, the causative agent of mesothelioma, has to reach the target cell for there to be the interaction to cause a cancer.

Q Just by way of example, you said that mesothelioma occurs in that mesothelial lining. How would that differ from lung cancer, just generally in reference to this photo?

A Well, generally, it develops in the walls of these tubes. And, actually, in the next picture, I'm going to show you the target cell for lung cancer, just because I want to show you what -- what I call a defense mechanism -- or they're called defense mechanisms. I mean, we walk around all day, every day faced with various things in the environment, whether they're bacteria, or

pollen grains, or viruses.

Bacteria, I think I said, are things that, typically, don't make us sick, because we have very good defense mechanisms. Our nose hairs and the moisture in the back of our throats collect a lot of these things. But some of that goes right past these defenses and gets down into the lungs.

So I want to show you what the surface of our lungs looks like. And I'm going to do that by focusing the microscope and filling the screen with what's in that red spot. Okay. It could be anywhere along the airway. But I'm going to fill the screen with what's in that red spot.

So I'm going to focus the microscope right there. And that's what the surface of our airways looks like. And you can see this says, human bronchiole. Bronchiole is a small airway. These are bronchioles, small airways. And they are all lined by these interesting little structures that look like hairs, but they're not hairs at all. They're extensions of the cell surface called cilia, C-I-L-I-A.

And cilia are constantly beating in a wavelength, synchronous fashion. So if something lands on our cilia, it gets swept up to our mouth. And we swallow it or spit it out.

Surrounding the ciliated cells, you can see there are

cells that don't have cilia. And those cells make mucous. And you don't think much about mucous, unless you're a smoker or you have a cold. And then you're making mucous, and it brings it up to your mouth. And you swallow it or spit it out.

Now, these cells that don't have cilia that line the airways are the target cell for lung cancer. So that's where the lung cancers go.

Q Okay. And let me ask you about the little bar down there in this -- in this photo.

A Right.

Q What is that?

A Okay. So the microscope prints the size of these things on -- on the pictures for us. Because some of these things are very small. And you need to understand how big and small they are. And this says 10 microns. That's the Greek sign for micron. And so you can see how easy it is to see 10 microns.

Q Well, how big -- how big is a micron?

A Right, exactly. Like I said, that's what you need to know to understand the magnification.

So if you take your thumb and your forefinger and you make a little space that you can just barely see with your naked eye. Your naked eye means you don't have a magnifying glass, you don't have a microscope. You're

just looking at it with your eye. That's about a millimeter. So the human eye can see about a millimeter.

Okay. Now, take that millimeter and divide it a thousand times. Okay. So you've made a thousand microns now. So that means the human eye can see about a thousand microns. Excuse me.

So it -- the reason you can see 10 microns is because I magnified this tens of thousands of times. And so now you can see what the size is. And if you want to know how big or small the cilia are, you take this little bar and you line it up in your mind's eye against the cilia. And you can see they're about 10 to -- eight to 10 microns long.

Q And so -- and so just -- let's see if I can do my math right. So if there's a thousand microns in a millimeter, there's 10 millimeters in a centimeter; is that right?

A That's right.

Q And there's one hundred centimeters in a meter. So, you know, around a yard; right?

A Yeah.

Q So is it -- is it fair to say there are one million microns in a meter?

A Exactly, yes. There are a million microns. Right.

Q All right. So have you studied how these cells --

both the ciliated cells and the mucous cells, how they can help to defend the body against asbestos?

A Yeah, sure. I mean, the fibers that land in the airways get swept up to the mouth. And we swallow them and spit them up out. I mean, it's a very effective defense mechanism. 90 percent of the fibers that we inhale, actually, land in these areas and can be expelled. A lot of fibers go right past the escalator -- I'm sorry. I didn't use that term.

Okay. So we call this the muco, for mucous, ciliary escalator, because it escalates things up to our mouth. So the mucociliary escalator is constantly moving things up to our mouth. But a lot of things go -- inhaled particles go right past the cilia, don't land, and are then deposited in the -- in the small airspaces. And those are the ones that cause asbestosis and mesothelioma.

Q All right. And have you studied the effect of whether or not once asbestos gets to the cells deep in the lung, whether or not there are any other defense mechanisms that the body has?

A Absolutely. We have additional defense mechanisms. We're on our way to see them.

First, I'd like you to understand that if -- obviously, we're sitting here now inhaling and exhaling the room air. About 20 percent of the room air is oxygen.

And that's our goal is to extract oxygen from the room air. And we do that in these small airspaces. That's why the lung has so much surface area.

If you took my lung out of my chest and stretched it out, it would pretty much cover the surface of this courtroom. We have a huge surface area in our lungs. And that's so it can absorb oxygen and -- and carbon dioxide. And the reason we can do that is because, on the surface of all these airspaces, we have a carpet of cells.

Now, if you think of this room that we're sitting in right here as an airspace -- okay. Take the ceiling off. And let's use an analogy where this room is now an airspace. And we're standing in the air, sitting in the airspace.

Q When you say "airspace," you're talking about one of those little holes?

A Yeah. That's right. That's correct. It's, actually, a cup. It's not a -- it's not a hole.

Q Okay.

A It's, actually, a three-dimensional crater. Okay. And if you look on the -- down on the floor of our airspace that we're in, I see this carpet that's made up of carpet squares. They're pretty obvious.

And if you think of every one of those carpet squares as a cell, you understand the nature of the cells that

cover all of our airspaces. We have this patchwork of billions of cells that make a complete carpet over the floor of the airspace, go up over the wall into the next airspace, et cetera, et cetera, just cover all of our airspace.

Now, if I took a big saw, and I cut through this room, and I showed you the cut edge, what would you see? You'd see the room we're sitting in. You'd see the carpet and the floorboards. And then in the space underneath the floorboards, you'd see the plumbing, the electricity running through that space.

Well, if I did the same thing and I cut through the walls -- so let me ask you to -- take you it into an airspace --

Q Do you have a picture of that?

A Yeah. So I'm going to go to the end of the airway where it opens out into these airspaces. So here's the end of the airway opening out into the airspaces. And, now, we're getting a little closer view of the cups.

Notice when I open this one up, I opened up a lot of holes in the walls. That's because the blood, all the blood in our bodies has to run through our lung to pick up the oxygen.

So I'm telling you that you cut through the floor here and you see pipes running, all the water in the

building is connected somehow through these pipes. All the blood in our bodies is running through the walls of our airspaces. And when you take a breath, the room gets filled with the room air, and the 20 percent oxygen diffuses through the cells and into the blood that's running underneath in these small vessels.

And then the blood carries the oxygen from the room air to your brain and your muscles. And you use it up. And you send back carbon dioxide. And you go like that. And that's what's going on in all of us all the time. Okay. That's breathing. That's respiration.

And I, also, want to add that if a rat or a mouse went running by here right now, they'd be doing exactly what you and I are doing, using exactly these same structures, exchanging oxygen and carbon dioxide using exactly these same cells and functions.

Q One real quick question. Down at the bottom, there's another bar. And it says -- does that say a hundred?

A Right. That's a hundred microns. So this is a lower magnification. So I didn't have to magnify it quite as much.

But, now, I want to take us into a single human airspace. So I want to blow this back up. Because I want to show you those carpet cells. And then I'll show you the last line of defense, and then we'll talk about

asbestos.

Q Okay.

A Okay. So I'm going to take us into a single human airspace. It could be any one of these airspaces. We're going to just focus the microscope right down on the carpet. And we'll look at those carpet cells. So any one of these, focus the microscope, take a picture.

And here we are now down on the carpet. And I'm outlining one of the carpet squares, except that nature doesn't make squares very well. Nature makes smooth surfaces, rounded cells and surfaces.

So this is, actually, a carpet oval. And then there's another oddly shaped cell over here, and another one over here. So, in nature, rather than having every cell the same, they're, in fact -- every one of them is somewhat different. And we have this big -- we have this patchwork of millions of cells that cover all of our airspaces.

And we have two kinds of carpet cells. We have these big, flat ones that allow the movement of oxygen and carbon dioxide. Then we have these smaller ones with little bumps all over them.

Q And what are those?

A So I'll give you the -- in order to answer that question, I'll give you the big word. Okay.

Q Okay.
A These cells are called epithelial cells. So epithelial cells cover surfaces. So your skin is epithelium. We call it epidermis.

Now, we have two kinds of carpet epithelial cells. We have the big, flat cells that allow the movement of oxygen and carbon dioxide. But if they get injured by infection, or asbestos, or ozone, or some oxidant gas that we know injures these Type 1 cells, these other kind of epithelial cells, the Type 2 epithelial cells, the cells with little bumps all over them, they, actually, start to divide and repair the injury.

So every one of us has in every airspace a repair mechanism. Because we're always facing things that can damage our airspaces. And when I say you and I have that, that means -- and I'm not going to say this too many more times -- rats, cats, guinea pigs, dogs, giraffes, we all have these same structures that repair our airspace.
Q So those -- those kind of round ones that are kind of clumpy, those are just sort of there as backup?
A They are there as backup. And we've done a lot of studies on how those cells respond to asbestos.

Asbestos -- all the asbestos varieties are very toxic. They damage these carpet cells. And we wanted to know how quickly they damaged them, and how long it takes

for these cells to repair the small airspace, you know, the fundamental questions about what asbestos does.

Q All right. Can you show us any more defense mechanisms?

A Last line of defense.

Q Okay.

A And we're going to go down onto the carpet here. And remember the cell with the bumps all over it. So we're going to focus right down here. So here's the cell with the bumps. And, now, here's the cell with the bumps. Do you see?

So I took that microscope right down onto the carpet. Here's the carpet cell down here, the smooth cell. Here's a Type 2 cell here -- a Type 2 epithelial cell here.

Then there are two added actors here. There's this one that's kind of ruffled, not going anywhere. Then there's this one with a tail end and two, what are called, false feet out in front of it. This cell was on its way in this direction going after this pollen grain right here when I caught it in the act about to pick that up.

So this lung once belonged to somebody who was killed in a motorcycle accident. And I was on the medical examiner's autopsy call. I went in and prepared this person's lung within not two hours after death. And we had these chemical fixatives that fixed the tissue in a

lifelike condition.

And so as this person was tooling along on his motorcycle, he was inhaling a lot of different things, I'm sure. One thing we know he inhaled was this pollen grain right here. It went right past the escalator and landed on the carpet.

We don't want any kind of foreign particles sitting on our gas exchange surfaces. So we have these cells called macrophages. Macro means big. And phage means eater. These cells are the big eaters of the lung. They patrol our airspace surfaces. They move microns per minute. And they can detect signals from things that don't belong there.

Like you see how this cell is directed toward this pollen grain. And it was going to pick up the pollen grain, envelop it, and digest it, not for nutritional purposes, of course, but to break it down. Then the cell migrates on to the cilia.

Every time we swallow, we swallow a few of our friends, these macrophages that are keeping our surfaces of our airspaces clean.

Q How did it -- how did it know the pollen grain -- they don't have eyes, do they?

A No eyes, no ears.

Q So how do they know to go get the -- in this

instance, a pollen grain, or anything else?

A Right. So you see how the surface of the cell is ruffled and anything but smooth. The surfaces of these cells are covered with chemical receptors. And we discovered in my laboratory the chemical receptor that attracts these cells to asbestos. I'm going to show you the next slide. I'm going to show you asbestos.

And we found -- as I was studying this process, we found that these macrophages were collecting -- within just hours after exposure, they were collecting around the asbestos. And, like you say, they don't have eyes, ears. Nobody is telling them where to go. They must have a chemical signal that is transferred along the carpet so that they can pick up a gradient.

In other words, it's like a -- it's like a honeybee finds the right flower, you know. They follow the course of the -- of the scent from the flower. It's the same kind of thing. And the thicker the scent and the heavier the molecule, the closer they are to that sort.

It's the same concept. These cells follow gradients set up by things that don't belong in our lungs. The yare -- they pick up bacteria. They kill bacteria. They break down pollen grains.

They have a lot of trouble with asbestos. So, while they do remove a lot of asbestos, they -- these cells are,

also, killed by asbestos. All of the asbestos varieties kill these macrophages. And it turns out, as I'll explain as we go on, that these cells, actually, become part of the disease process. Because they're killed by asbestos.

Q Okay. And I think the next slide I have is this one.

A Right. So we've seen all the cells we need to see to understand what happens when asbestos gets into the lung. So we can talk about asbestos.

Q Okay. This one says, chrysotile asbestos fiber bundle. You told us there were a variety of different types of asbestos. This one happens to be chrysotile.

A Yeah. This is chrysotile. As I said, I've used chrysotile, crocidolite, and amosite in my laboratory. But chrysotile is 95 percent of the world's use. And so I've used mostly chrysotile in my work.

Q Okay. And on this one, are there -- there's another bar down at the bottom that gives you a measurement. What -- so how can you use that to say how big these fibers are we're looking at?

A Right. So this is a one micron bar. And you remember that it's hard to see a thousand microns. But I magnified this 4,300 times so that you can see a micron quite easily.

And if you take, again, in your mind's eye, and you set this on this fiber, you can see this fiber is probably

about five or six microns long. Because you can just put five or six of these little bars along here. And that makes this bar about six microns long.

You can see that some of these fibers start out at a micron thick, and then break down to less than that, and break down again to tenths of microns. Look at these fibers that are passing through the micron bar. They're tenths of microns.

So there's a huge range. Some of these fibers are hundreds of microns long as they go off the screen. And some of them are as small as -- as thin as a fiber can get at about a tenth of a micron. So there's a huge range. And these -- it's constantly changing.

Chrysotile asbestos fibers are constantly breaking down. They're breaking down in -- when you mine them. They break down in the products. They break down in the air. They break down in the lung. And so they're constantly getting smaller and thinner.

Q Okay. And I've heard the term "fibril." What is that?

A Yeah. So these are fibrils. You're looking at fibrils. A fiber is, actually, an agglomeration of fibrils.

Q That means a bunch of them together?

A Exactly.

Thank you.

A bunch of them together. Perfect.

Q Okay. And then if they -- as they -- you say you see these tiny, tiny, thin ones, you might call that a fibril?

A This is fibril. See this one right here? Then this one going through -- that's right. That's the smallest division of a chrysotile fiber is a fibril.

Q All right. And then have you looked at how this, actually, gets into the body and affects cells?

A Right. So the next couple of slides I'm going to show you are from experiments I did where we exposed animals.

So, in other words, we used chambers that Dr. Wagner developed decades ago. They're about six feet high, four feet wide. We used, typically, rats or mice. We put them into the chambers and created a very dusty environment. The idea is to be sure that the animals get a disease process. We're not trying to protect them. We're trying to make sure that they get a disease process.

I didn't take them all the way to the mesothelioma -- clinical mesothelioma process. Other investigators have done that. Dr. Wagner did that decades ago. He showed that all of the asbestos varieties, crocidolite, amosite, and chrysotile cause mesothelioma in these animals.

The epidemiology is clear that all the asbestos

fibers cause mesothelioma. So it wasn't my goal -- excuse me -- to produce mesotheliomas in the animals. What I wanted to know was, what are the processes that lead to the cancer?

If you expose these animals through their lifespan, which is about two to three years, a few of them, near the end of their lifespan, get mesothelioma, just like people. A very small percentage of people exposed to asbestos get mesothelioma. It's the same thing in these experiments as well. Very few of them get the disease.

So the concept, in my experiments and a lot of other scientists, is to understand the beginning, the process. What does it take to, in the end, produce a clinical disease? And so that's where we're going.

Q Okay. So does -- the next slide starts on that adventure, I guess.

A Right. Okay. So here -- now, this is from a rat. This is the -- you're familiar with this now. So this is from -- this is from the lung of a rat that's been exposed to asbestos for a single hour. Because I wanted to know where the fibers land in the lung.

If I take the animals out immediately after a single hour of exposure and I give them an anesthetic, an overdose, they're not going to wake up from that. And then any asbestos that I see in the lung, obviously, got

in there during that first hour.

So let me show you -- and this is how we answer the question, where do the fibers land. Now, this is one of millions of spots like this around the lung. It's been the topic of a number of different papers I've written. I'm going to show you one slide, one spot, understanding that this is an example of that.

So I'm going to focus the microscope right here. Here are the airspaces that we've been looking at. Remember the blood running through these small capillaries in the walls. And I'm going to blow this area up right here. I'm going to focus on this spot immediately after the exposure. And -- okay.

So this black hole right here is this black hole right here. So we're looking at this carpet right here.

Okay. Now, you can see -- here's -- this is a 10 micron bar. So this fiber is about 10 microns long. And you can see, again, there's the whole range of fiber sizes and shapes.

Q So that's the asbestos that, actually, landed there?

A It's landed right here. It's a long, curly fiber. Remember, we looked at the asbestos, some of these fibers are long and curly, some are short and straight. And here they are now on the lung. Some are long and curly, some are short and straight. And the whole array of fibers is

now sitting on the carpet.

Now, the concept here now is to figure out -- well, now, we know where they land. What happens next? And so we did a series of experiments to understand that. And you can see one of the things that happens next is that some of the fibers start disappearing under those carpet cells. In fact, here, you can see the asbestos very clearly, but here you can't see the fibers. Because the carpet is covering the fibers.

In fact, you can see the carpet is kind of lifting here. And, here, you can see the fibers very well, but you can't see them here. What we discovered was that when the fibers land on the carpet, the carpet cells come up over the top of the fibers and shove them under the carpet.

Now, it was a surprise to me when I came -- when I saw this. I'm looking at this under the microscope. And I'm saying, where are these cells going? No one has ever reported anything like this.

So we had to do a whole series of experiments by slicing through -- remember I showed you a cut surface, what it would look like? Well, we use these very -- what are called diamond knives. And we make very thin sections, and put them into the microscope, and prove where the fibers are going.

In fact, have we heard that we all have some asbestos in our lungs?

Q I said in opening that we all have a little bit of asbestos in our lungs, but that's not evidence. So let me ask you about it.

A Okay.

Q Is it true that we all have some asbestos in our lungs by virtue of just what's in the background air?

A Absolutely true.

Q Okay.

A And the point is that our asbestos is under the carpet. Okay. We have a space, a storage space under the carpet that we all, including rats, and cats, and giraffes -- we all store things in this compartment.

Now, we store those things. And, typically, we don't get enough to cause disease. From the environment, the little bit of asbestos we get, even though it can be millions of fibers, that's not a lot. You can get a billion asbestos fibers into a thimble, those little sewing thimbles, remember. You can get about a billion fibers into them.

So a few million fibers in somebody's lungs is not a lot. And as you accumulate those slowly over time and they distribute within all of our spaces underneath the

carpet, it's not enough to cause disease.

Q And just, generally speaking, what's the difference between the background that -- the little bit you said that is in the air and someone who's, you know, perhaps, exposed for 10 or 20 years occupationally?

MR. TIVIN: Objection to foundation.

THE COURT: Overruled.

THE WITNESS: I mean, it's called orders of magnitude difference. In other words -- so let me give you an example.

A typical background concentration of asbestos, like if you walked outside, would be .00001 fiber. That's a ten thousandth of a fiber. So you'd need -- so a sugar cube -- if you picture a sugar cube, that's about a cubic center meter of volume.

So if you take a cubic centimeter of air, you'd need 10,000 cubic centimeters of air to find a single fiber. That's the concentration of fibers that we're talking about when you go outside.

Okay. Now, an order of magnitude means you lop off the zero. Okay. So in a setting where people are using asbestos, you know, you don't have -- you don't have .000, typically. You have -- you know, five or six fibers per cc, or even .1 fiber per cc is a lot. Orders of magnitude increased over what we, typically, are exposed to.

BY MR. PANATIER:

Q So --

MR. TIVIN: Objection. Move to strike as nonresponsive.

MR. YOUNG: Join, Your Honor.

THE COURT: Overruled.

BY MR. PANATIER:

Q So just to sum it up just real easily. If someone was exposed to one fiber per sugar cube of air, that would be approximately 10,000 times higher than this general background; is that fair?

A Yeah. That's one way to look at it, a different way. Yeah. That's right. Exactly.

Q All right. So you are looking at the exposure to the animals and where this asbestos went. Did you follow it?

A Yes. So let me show you that in the next slide. Again, this is an example of hundreds of pictures and papers that I've written on this -- on this topic; right?

So -- so here's an airspace. Here is another airspace, another experiment, another set of animals. There's a small asbestos fiber bundle right there. You can see there's a little bit of a fiber sticking out, and another one on its way in. You can see the fibers here. But you can't see them here because they're covered.

Over here it, actually, is a fiber that's completely

covered. And all you can see is sort of an electron shadow of the fiber. So there's a range of fiber uptake. So the fiber that's completely covered probably landed before the fibers that you can see; right? Because this is a process that is progressive as time moves along.

Q I'm more interested in the SpaghettiOs, though, there in the --

A These?

Q Yeah.

A SpaghettiOs. Okay.

Q What are those?

A All right. So -- actually, I've never heard them referred to as that.

Q They look just like SpaghettiOs.

A Yeah, sure. That's brilliant.

Okay. So this is what our red blood cells look like. Now, they look like sort of like doughnuts or SpaghettiOs, if you will. Because they have a depression, not a hole in the center, but a depression. So that would not be a SpaghettiO then.

Q Okay.

A All right. So you can see them -- these red blood cells are lined up in the capillaries, those small blood vessels. And you can see that some of the fibers are, actually, moving into the -- what's called the fluid flow

of the lung.

The fluid flow of the lung has two compartments. One is blood. And we and other investigators have shown that asbestos can get into the blood flow and, therefore, go anywhere in the body. But there's a more significant fluid flow.

Q What's that?

A So -- and that's called lymph, L-Y-M-P-H. Lymph is a clear fluid that flows from head to toe in our bodies. Wherever blood flows, there's lymph flowing around it. Here, you can see blood flowing. And if I were to peel back -- remember, the capillaries are flowing under the carpet. Okay. In fact, we're sitting in the airspace -- we're sitting in an airspace. And the air comes rushing in. And the oxygen has to diffuse through the carpet and into the blood that's flowing by, and there it is.

This is how thin -- you can see how thin it is. This is that barrier between the air that we're sitting in and the blood that's flowing by. So the blood cells are going to pick up the oxygen from the room air.

Now, if I pulled back the carpet and I show you where those blood -- where the blood vessels are running, and they look like tubes. It's moist in there. It's wet. And it's wet because there's lymph fluid in there. It's like if I opened up your peritoneal cavity or your chest

cavity where our lungs sit, or our stomach, or all of our organs, it's wet, it's moist, because of lymph.

Lymph is a clear fluid that flows from head to toe. It's two functions are, number one, to control pressure in the blood flow and, two, to carry cells of the immune system. Those are its normal functions. And we have these small bundles of tissue called lymph nodes. You've probably all heard of lymph nodes.

Lymph nodes filter all the lymph fluid that's flowing. And, sometimes, you can feel them getting irritated in your armpits or around your -- around your neck. Because they're carrying cells in the immune system. And if you're fighting an infection, you can, actually, feel that in your body. It turns out that asbestos collects in the lymph nodes.

So we can talk about lymph flow, because what has been determined is that -- that asbestos gets into the lymph. And that's an important pathway to the pleura, to the target cell for mesothelioma.

Q And I think I, actually, put that in out of order, that slide.

A That's okay. Actually, we can digress for a second.

Q Yeah. What is that?

A Okay. So these are macrophages. So here is an airspace. This is the carpet. And, here, you can see

some asbestos fibers that were inhaled. And a bunch of macrophages came in to collect the asbestos. And you can see one, two, three, four, five, six. And that's exactly what they're doing, but this one's dead. These are dead. You see they're covered with holes. Remember what the normal ones -- remember what they're supposed to look like? Ruffled and handsome. This picture is copyrighted, by the way.

Q Is it really?

A Yes.

Okay. So -- so here are these macrophages, dead and dying, because they have picked out very toxic chrysotile asbestos. Now, what happens is when macrophages die, they release a series of what are called cytokines, those are cell messengers. And they're telling other cells to -- to divide, and multiply, and repair whatever injury has been produced.

And I'm going to tell you in a minute, when we talk about cancer, that a dividing cell, a cell that's making new cells, is more likely to become a cancer cell. So you don't want cells dividing out of turn. And killing macrophages does that. It causes cells to divide out of turn. So that's why that's there.

Q Okay. All right.

A Okay. But let's go back to the lymph for a second.

So this moisture that I told you about collects in small vessels called lymphatic vessels. And this is a picture, a diagram. It's called a Netter diagram. Dr. Netter has given us atlases of the human body in health and disease. Here, Dr. Netter is showing us the pattern of lymph flow in the lung. And you can see these small vessels, many of which end at the pleura.

And if you look at the surface of the pleura, you can see that there is a reticular, netlike pattern on the surface of the pleura. Because there's lymph running around through the lung and out to the pleura. And these green blobs that you see around the lung, those are lymph nodes. And you can see how they're interconnected by lymphatic vessels.

Now, some investigators -- it's not my work. But some investigators studied these lymph nodes around the lung and, also, lymph nodes in the peritoneal cavity. The peritoneal cavity is the second most likely place to get a mesothelioma. The first most likely place is on the surface of the pleura, the mesothelial cells. The peritoneal cavity is lined by mesothelial cells, the same kind of cell, second most likely place. A lot of lymph nodes down there.

Some investigators studied the lymph nodes in the peritoneal cavity and the lymph nodes around the lung.

And they found increased asbestos collected in the lymph nodes in people occupationally exposed to asbestos.

So that shows -- that proves that asbestos gets into the lymph flow. Theres's no other way to get a fiber into the lymph system than to inhale it, have it pass into the lymph flow, and then be trapped in the lymph nodes.

Q Is it the case that all of the different types of fibers we've discussed can get into the lymph system and out to the pleura where mesothelioma occurs?

A Absolutely. It turns out that chrysotile is more likely to get out there. Because it breaks down into smaller fibers and is more easily transported into the lymphatic network.

Q Okay.

A All right. So I'm going to finish this concept of translocation. I have one more slide. And then we'll talk about cancer.

So I'm going to cut a piece of the lung out here and make another diagram -- well, I didn't make the diagram, but Dr. Craighead, who was the chairman of the pathology department and gave me my first job, actually, wrote a chapter on this process. And that's from one of his books. And I'll show you that in a second.

But you're going to see the pleura on the right. And you'll see the lymph vessels, but in a little -- in a more

focused way, a blown-up way. So I'm going to cut this out, pleura on the right. Here is the pleura on the right. You see it says, normal mesothelium. So you have a single layer of cells sitting on a little connective tissue. That's the pleura. And then you can see the lymph vessels, just like the ones here but now blown up so you can see they, actually, transport things.

So the artist has a fiber getting inhaled, and another one here, into the bronchiole. Remember, I showed you how that happens. The fibers then land on the epithelial surface in the small airspaces.

You can see this fiber is -- sort of part of it sticking out. And the rest of it is inside this vessel, kind of like this picture that I took right here, a little bit of it's sticking out on its way into the flow. That's exactly what's happening here.

And you can see the artist says, lymphatic -- lymphatic fiber transport to the pleura. So that's what's going on in these small vessels as the fibers, finally, reach the target site -- the target cell for mesothelioma. And here the artist is showing you that there are different kinds of mesotheliomas, epithelial kinds and mixed. And that's for another discussion here.

Q And have you shown -- shown and studied, once the fiber gets there to the target cell, the mesothelial cell,

how it can cause cancer?

A Exactly.

Q Okay. And you've got a new slide here, cellular and molecular aspects of fiber carcinogenics. What is that?

A Right. So this is the cover of a proceedings of a meeting I was at a few years ago. And the concept -- and I gave a talk at this conference. And the concept at the meeting was to discuss how fibers cause cancer. Here's the big word, carcino, cancer, genesis, formation, formation of cancer. Carcinogenesis.

Now, I've been talking to you today about cells. I showed you that certain cells pick up these fibers, macrophages, epithelial cells pick up the fibers. But you cannot talk about carcinogenesis, unless you talk about the molecular aspects. And that means your genes.

Molecular biology is the study of genes and genetics. And maybe you saw on my CV the last position I had as a professor was in the department of molecular biomedical sciences. So that's the biology of medicine at the molecular level, genes and genetics.

Now, humans have about 20 ,000 or so genes. Some have said up to 30,000 or so genes. There's still a little bit of discussion about exactly how many we have. But there's somewhere between 20,000 and 30,000 different genes that make us what we are. You can see what a few of

those genes do. You look around. You see different hair color, eye color, skin color, different size people, different metabolisms. These are all things that you can see that our genes do.

Q Can you tell us -- I'm sorry. When I was young, my mom would say, It's in your genes. That's why you're short. And I would look down at my pants and try to figure out what about my jeans was causing me to be short. What are genes?

A First of all, they're not spelled J-E-A-N-S.

Q I figured that out.

A We're talking about genes, G-E-N-E-S; right? And these, of course, are our molecular blueprints that make us what we are. Now, the reason I'm telling you that is because cancer is a -- I think I said a genetic disease.

Let me give you the simplest definition of cancer. Cancer is the loss of control of cell growth. Okay. I'll say that again, and then I'll explain. Cancer is the loss of control of cell growth.

If I took a piece of your skin and I put it under a microscope, I can show you that about 10 percent of your skin cells are dividing. You're always making new skin. You're always losing skin. So you always have to make new skin.

And there's a layer of skin that you can't see that

is always -- has about 10 percent of those cells are dividing. Your lung and your liver are about one percent. The surface of the mesothelial surfaces, one-half of one percent. So there's a range of requirements that our body has. And those growth rates are all controlled by genes. And of the 30,000 or so genes we have, about a hundred of them are growth-control genes. I'll tell you a little bit more about some of those.

In order to get a cancer, you have to have errors or mistakes, mutations sometimes, in genes that control cell growth, a set of genes. A single gene error -- there are a few cancers like that. There are some breast cancers, some prostate cancers that only require an error in one gene, but that's very unusual.

Most cancers require mistakes or errors in sets of genes, multiple genes. 10, 20 separate errors, sometimes, before a cancer will develop. So a carcinogen is a cancer-causing -- a cancer-causing substance, a carcinogen, a cancer-causing substance.

Q Is asbestos a carcinogen?

A Asbestos -- all the asbestos varieties are complete carcinogens. It means you don't need anything else. They in and of themselves can produce the changes, the errors I'm telling you about in growth-control genes that are necessary to produce a cancer.

Now, the way -- one of the ways we study that is by taking cells out of people or out of animals, put those cells in a dish. And, actually, if you give the cells the right nutrients, those cells will grow. And I don't mean get bigger. I mean they divide and multiply.

And then you can add the agent you're interested in studying and, actually, watch the interactions between those carcinogens and the cells. And that's a common way it do it. There are other ways, but that's one way.

Q Is that what was going on there?

A Exactly. Here are two cells. I'm outlining one for you here. There's another one over here. And this is two of millions of cells in this experiment. I'm showing you two of them, and some fibers were added. You can see kind of a long fiber here and some short fibers. And notice how the fibers have collected around the center circle in the cell. But they're excluded from the center circle.

The center circle is called the nucleus. And the nucleus of all of our cells contains our DNA. DNA are genetic material, all of our genes. Genes are short segments of DNA, and they're -- the segments have a specific alphabet in them that makes them your genes or my genes.

I mean, a gene that grows hair on us that causes hair is the same gene that's growing hair on a mouse. But the

sequence of that gene is just different enough that you get a mouse hair on a mouse versus one we're growing.

The concept is that a gene is sending a message that is -- that produces a -- either a protein or a set of structures that we can see, eventually, or -- or it plays a role in our metabolism.

So here, the DNA is protected by this membrane that goes around the nucleus. And you can see that because there's no asbestos. There are no fibers in the -- in the DNA. And that's the good thing. That's exactly what we would -- we would hope for.

Q So can the cells always keep it out?

A No. So here's the point. When a -- I think I told you earlier, I think I did. A dividing cell, a cell that's dividing, is more likely to become a cancer cell. And the reason is -- your question -- the reason is because, when a cell divides, it loses that protective membrane.

So we asked what would happen if we added fiber asbestos and other agents, and studied the interaction of those agents with the DNA in the dividing cells. And we can go on and see what...

Q Okay. This says, normal cell division. This is, I take it, a cell that has divided?

A Right. So this is what is supposed to happen. This

is what's happening in all of us right this second all the time. As I said, your skin, your GI tract, there's a lot of cell division going on all the time. There are three cells here, one, two, three. The two cells on the outside are not dividing. The nucleus is intact. The DNA has been stained blue so you can see where it is.

The cell in the center is dividing. Now, it has a -- it's received a signal to divide. You cut your skin or you scrape your skin, the cells around that wound get a signal from your serum in your blood, let's repair that injury. It's signals that are carried in your blood.

And the cells around that wound go from a normal 10 percent rate to about 40 or 50 percent rate until that wound is healed. And then they go back to the normal 10 percent. That's normal cell division. And that's, as I say, what's going on all the time.

The idea is to condense the DNA into these threads called chromosomes. Chromosomes are bands of condensed DNA that hold all of our genes. Let me show you -- let me show you what our chromosomes look like. This is human karyotype. A karyotype just simply means a chromosome distribution. And you can see the light and dark bands across all of our chromosomes.

So humans have 23 pairs of chromosomes. You've got one from your mother, one from your father. And the light

and dark bands indicate where all of our 20,000 or 30,000 genes are distributed.

The take-home message from this slide is that every one of our genes must be on the correct chromosome, and in the correct place on that chromosome or that gene will not work. Okay. I'm going to come back to that point a couple of times. Because that's the key to development of a cancer. Because some of these genes distributed here are those growth control genes, I told you, that have to be damaged for a cancer to develop.

So let's go on and finish that process where the cell receives a signal to divide. You can see the chromosomes now. They've been stained purple. So you can see where they are.

And, now, if they go through faithful replication -- meaning every gene on the correct chromosome in the right place -- the cells divide. And you have two normal -- what we call daughter cells just like the original. And, again, that's what's going on all the time.

Now, we put asbestos into these kinds of experiments.

Q Is that what that's showing there? Those are asbestos fibers?

A Right. So, again, this is one of millions of cells in these kinds of experiments. In Panel A, we have a single cell, no fibers. Half the chromosomes go to one

side, half to the other. Then you'll have two normal daughter cells, just like you should.

Now, over here in Panel B, we've added crocidolite asbestos in this experiment, this set of experiments. These were experiments done in my laboratory and with colleagues in adjacent laboratories. And we studied a whole bunch of different fibers. In this one, we used crocidolite.

And, here, you can see a long crocidolite fiber. So this cell from this side to this side is about 40 microns. Okay. So, obviously, you can't see this. You need a microscope.

In this case, we're using a light microscope. So you don't get a lot of the detail that you've seen with -- when we use the electron microscope. But, still, you can see that the cell is intact, that there's about a 30-micron-long crocidolite fiber, or a 20-micron-long fiber.

Then there are some shorter fibers here. And I put arrowheads on these because these fibers have some of the DNA bound to the surface of the fibers. So most of the DNA is where it's supposed to be. But some of the DNA is bound to the surface of the fiber.

Now, that results in a condition you can see up here called aneuploidy. Now, I'm going to show you one more

slide. And then I'll tell you about the aneuploidy.

Q Okay.

A And then I just have one slide after that, and I'll be finished.

So this is the same kind of experiment, but now mesothelial cells have been used, and chrysotile asbestos was added. And, here, you can see a normal mesothelial cell, no fibers. Half of the chromosomes are going to go to one side, half to the other. And we'll get two new cells.

Here, the daughter cells have -- are forming, but they're not quite separated. You can see there's a bridge between the two. And there's a chrysotile fiber that's spanning the two cells. And there's some DNA bound to the surface of the fiber.

Now, aneuploid cells are not cancer cells. But aneuploidy means abnormal chromosome separation. These are not cancer cells, but the door has been opened.

Q Okay.

A What do we mean by that?

Q Yeah. And so you talked about how, to have cancer, you have to have damage to the genes that control cell growth?

A Exactly.

Q And this, obviously, is impacting the DNA that has

the genes on it; is that right?

A Right. So -- so, remember, I told you that in order for a gene to work, it has to be in the right place on the right chromosome. Well, there are a lot of genes in this DNA. And there are a lot of genes in this DNA. And I wouldn't know which ones they are, unless I took that specific clump of DNA out and did a sequence on it. And that's been done.

But you can be sure that within this DNA, or this DNA, there are some genes that control cell growth. And those genes are not where they're supposed to be, obviously.

Now, I'll tell you about two of them. Okay. Of the hundred or so that we have, I'll tell you about two of them. Because we've studied them in my laboratory.

One of them is called p53. It's a -- it's a gene of 53,000 molecular weight. That's why they call it 53. It's a protein -- it produces a protein, so it's called P.

This gene was the molecule of the year in 1993. That means it got its own cover on Science Magazine. And it's been called the guardian of the genome. Because what happens is if a cell gets -- becomes aneuploid or if there are genes that control cell growth are damaged, the p53 gene gets activated and stops the cell from dividing.

If the cell is not dividing, then the daughter cells

don't get the mistakes, and the tumor can't continue to develop. So they can't pass on the mistakes. The p53 gene is damaged in about half of all human tumors. It's a very central gene to protecting our genes. In fact, it's called -- I don't know if I said the guardian of the genome. It's a very central gene to protect us.

Now, if there's p53 in this clump of DNA, the p53 is not going to work.

Q Which means it won't be able to tell the cell to stop dividing?

A Exactly. Now, there's another set -- there's a set of genes. They're called death pathway genes. When there is this kind of DNA damage in aneuploidy, these cells, typically, die.

And they die because we start activating a set of genes that kill the cells, actually, literally, send the cells down a death pathway. The cells die. You never hear anything more from them again. And, obviously, it's protecting from -- protecting us from getting a cancer.

Q And that's what -- you, actually, want the cells to die if they have an error?

A Absolutely. And that's happening in all of us all the time. We all go out, we get a sunburn. That radiation causes DNA damage. UV light causes genetic damage. But, typically, you don't get a tumor right there

because of this death pathway that causes these cells to die.

You breathe somebody else's cigarette smoke -- I know some of you don't smoke here. So you breathe somebody else's cigarette smoke, you get some DNA damage. Those cells die. And you never hear from them again. And that's going on, as I say, in all of us all the time.

Q And that's what you hope happens anytime there's an exposure to a carcinogen?

A Yeah. These are very essential protective mechanisms. Remember that no matter how much asbestos a person is exposed to, it's highly unlikely that they'll get a mesothelioma, no matter how much asbestos they're exposed to, because of these very effective defense mechanisms that we all have.

Q Okay. Now, but we still see -- people, obviously, get mesothelioma. Do you have a range that you could give us of approximately how many occur per year in the U.S.?

A I mean, I've seen anywhere from 2,500 to 3,000 new cases every year.

Q Okay. And is it the case that some people can be exposed to asbestos constantly and not get mesothelioma, and some can be exposed to the same amount and they do?

A Well, that's exactly what I'm saying. And that's related to this concept of susceptibility. What is it

that makes one person more susceptible than another? And it has a genetic basis. And at this point in time in science, we can't tell you what set of genes makes somebody more susceptible than another.

But, I mean, just as an example, when p53 gets activated and stops a cell from dividing, we have other sets of genes that make enzymes called DNA repair enzymes. And they can, actually, knit back together damaged DNA. Now, if somebody's DNA repair enzymes are better than another person's because they're more effective or there are more of them, they would be less susceptible.

You know, I mean, there are a whole list of things like that that would make one person more susceptible than another.

Q Like some people may feel like they get sick a lot, and someone else may not?

A Well, no question. I mean, there's susceptibilities to getting -- to coming down with the flu. I may be exposed to the same flu virus as you, and it depends on the genetics that control our immune system.

Q And what is this slide?

A All right. So this is the final slide that you've asked me to show. And what I want to do there is sort of summarize what I told you. I mean, cancer is a very complex process. And that's shown in the fact that we

don't know how to cure most cancers. And that's because -- that's because these cells that have sufficient genetic errors, we don't know how to shut them off yet. But, I mean, that's where these things are -- that's where the therapies are headed.

But I want you, also, to understand what's going on in that area called latency. That's sometimes difficult to understand.

Latencies in most -- I don't know the latency in this case. But, typically, they're anywhere from 30 to 60 years. I mean, most cases fall in that 40- to 30- to 45-year latency. That's the time from first exposure until the time the person comes to the clinic.

Now, what's going on during those decades? I'm going to try to answer that with this slide.

Q Okay.

A Okay. So here the artist has given us a single layer of mesothelial cells. And you can see the single nucleus. And these cells are normal and sitting among the other hundreds of millions of them on the mesothelial surface. And then the artist has a couple of lightening bolts come in. He says, DNA damage. As far as I know, lightning doesn't cause DNA damage.

What we're talking about is something from the environment has reached the nucleus, reached the DNA.

We're talking about a mesothelioma. We're talking about asbestos. Asbestos is the only known environmental cause of mesothelioma in North America.

So, here, we have the DNA damage, which we know is required for a cancer. And the artist has one of the daughter cells going off into the upper left-hand corner and dying. And you can see the DNA is clumped up. And the surface of the cell is bubbled up. And here is a macrophage coming in to clean up the mess.

So that's what is -- the artist knows very well that's what happens to most cells with DNA damage. They die. You never hear anything more about them.

But now we're talking about a cancer. So we have to have a surviving daughter cell. And that's what this cell is. And you can see it's dividing because you can see the chromosomes. The only time you can see the chromosomes is when the cell is dividing.

Now, then the artist produces this tumor with this odd green color that I'll tell you about in a second. But between this first daughter cell with a genetic error and the tumor, you've got to give me about 40 years in here. Okay. That's the latency. So I'm going to talk to you about -- just spend just a minute and talk to you about what's going on on the surface of the mesothelium during those 40 years.

So now here is this single cell with a genetic error in a gene that controls cell growth, whether it's p53, or the whole set of death pathway genes, or enzyme repair genes, whatever it may be. There's a cell with a genetic error.

And it can sit there looking and acting like a normal mesothelial cell for months. You'd never know it was there. Nobody is going to go in and start taking mesothelial cells off people's lungs and doing a DNA sequence. It's just, obviously, not going to happen.

So that cell then sits there. But, eventually, it has to divide. All of our cells -- I told you half of one percent, but it -- still it has to divide. Two cells, four cells, eight cells, 16, 32, making a little field of cells all with the same error that they've passed on.

And one or more of those cells gets hit again by another fiber. And now you have two errors, and a second gene that controls cell growth. You can't predict just how many errors it's going to take. It's -- in mesothelioma, it looks like it's more than five. We know that when you look at the DNA distribution of genes in mesothelial tumors, there can be 16 or 20 different errors. We can't tell you just which ones were required, but there are a number of them. Okay.

So now we're up to two. Okay. We have a separate --

two separate errors now. And that cell sits there looking and acting like a normal mesothelial cell for months. Eventually, it has to divide, two cells, four cells, eight, 16, another field. And one or more of those gets hit again.

Now, if I stand here and do that for 40 years, that's what's happening. In other words, our genetic defenses are continuously knocking out cells with genetic damage.

But, eventually, a single cell with sufficient errors and a combination of errors for that person -- remember how hard it is to get a cancer. A sufficient number of errors and in a combination of errors sufficient for that person that it grows out into this tumor. And that's why the artist made them all the same color, this odd color, because they all came from a single cell with sufficient errors.

Now, it might be -- there's some good recent evidence that -- and this is called a clone, by the way. Because all the cells came from that one cell -- all the tumor cells came from that one cell. There may be multiple clones.

Now, I told you there are these different fields of cells that -- that develop with multiple errors. You may have more than one clone grow out. And they -- by the time the person comes to the clinic, it looks like one

tumor, but there could be more than one clone. But that doesn't change anything I told you about the way the asbestos is interacting and causing genetic damage. And then, eventually, that tumor grows and brings that person to the clinic.

Q All right. I have a few more questions for you that you can take your seat, if you'd like.

A (Witness complied.)

Q You mentioned on the issue of what diseases does asbestos cause -- we talked about this a little bit. And I'm just going to kind of move through this a little bit quickly.

The first one I want to ask you about is asbestosis. You mentioned asbestosis.

A Right.

Q Is that a type of cancer?

A No, it's not. It's a scar tissue. It's the production of scar tissue caused by asbestos. So, remember I told you that a certain percentage of fibers are taken into that compartment under the carpet. That's where asbestosis develops. That's where the scar tissue develops, because of the injury to the carpet and the activation of cells that make scar tissue.

Now, that, typically, requires long-term, high levels of exposure.

Q Okay. Now, do you have to have asbestosis first before you can develop mesothelioma?
A Oh, certainly not. In fact, most cases of mesothelioma, you don't see the disease -- separate disease asbestosis.
Q Now, you brought up latency. And, to be clear, you are not one of Mr. Seay's treating physicians. You're not a medical doctor; right?
A I am not. That's true.
Q Okay. And I want you to assume he was first exposed around 1971, diagnosed in about 2013. So that's -- you're talking just around 40 years.
A Okay. Good.
Q Is that typical of the latency for an asbestos-related mesothelioma?
A As I say, I mean, I really -- I really did not know that was his latency period. But, yeah, sure. That's a classic latency period.
Q Okay. And asbestosis -- lastly, can asbestosis, if it develops, be a fatal disease?
A Oh, certainly. If it develops -- progresses, gets worse, yes.
Q I'll blow up that little side image there, pleural plaques. Just real briefly, what are pleural plaques?
A All right. So, here, you can see the artist has cut

the ribs away. This is the ends of the ribs. And this is the surface -- you're, actually, looking at the mesothelial surface right here. And a lot of the fibers -- I showed you how the fibers get to the pleura.

Well, some of those fibers cause scarring by the same way they do -- cause scarring in asbestosis. That process under the carpet, that same process can occur under the pleura, sort of the underlying connective tissue of the pleura.

I mean, the pleura is really two layers. There's that mesothelial cell layer on the outside sitting on a thin layer of connective tissue. Connective tissue is what -- you know, you pinch your skin, you let it go, it'll pop back because we have this elastic tissue.

Now, if asbestos gets into that normal elastic tissue, it will cause scarring just like it does when it goes underneath the carpet. And there, it can produce this scarring that forms these plaques or along the surface of the lung.

Q Okay. We talked a little bit about the differences between lung cancer and mesothelioma. Just briefly, I want to ask you -- here, we're looking at lung cancer and that clump in the middle. What's that?

A This is a -- this is a lung cancer. You can see it's centrally located. Actually, the normal pleura you can

see is here, thin, shiny, just the way it should be. The tumor started.

I showed you the target cell for lung cancer in the walls of the airways. And that's why this is a centrally-located tumor. It started somewhere in the wall of one of these airways.

Q Now, we've all heard that -- you said that all the types of asbestos we discussed could cause lung cancer; is that fair?

A That's right.

Q And -- but we, also, know that smoking can cause lung cancer; right?

A No question.

Q Okay. Have there been studies that have shown the impact of smoking plus asbestos on the rate of lung cancer?

MR. TIVIN: Objection, relevance.

Can we approach?

THE COURT: Sure.

I'll tell you what. Let's take a short recess. Don't talk about the case. Continue to keep an open mind.

(WHEREUPON, the jury was excused from open court at approximately 11:14 a.m.)

THE COURT: We'll take a five-minute break.

(WHEREUPON, a break was taken.)

THE COURT: So just for planning purposes, how much longer on direct?

MR. PANATIER: I have five to six minutes. And it's going to be, apparently, a very short cross.

THE COURT: Okay.

MR. TIVIN: I anticipate being done before lunch, before noon. I don't know --

THE COURT: Before noon?

MR. TIVIN: Yeah. I mean, I...

THE COURT: Okay. So I guess the issue is, your next witness is a video; right?

MR. PANATIER: A video, which we -- we would need just a second to switch it over. We could get it switched over in just a couple minutes, or we can just go to lunch whenever, and play the video after. We're flexible.

THE COURT: And that video is how long?

MR. PANATIER: That video is an hour 20. And then the Defense is going to read in the discovery, which may fill a lot of the afternoon.

MR. TIVIN: A long time, a long time.

MR. PANATIER: It's going to be -- we would, actually, ask Your Honor, if you would, you could tell the jury they could drink a lot of coffee at lunch.

MR. TIVIN: Dr. Brody is the last live witness that we'd have.

MR. PANATIER: If they finish that read-in, we'll start with another video.

THE COURT: Okay. Well, let's just -- I guess if the testimony of Dr. Brody concludes, we may be better off just going to lunch and coming back.

MR. PANATIER: That's probably the way to --

THE COURT: Does that suit everybody?

MR. PANATIER: That works. Yeah, that suits us.

THE COURT: Okay. You can bring the jury in. Thank you.

(WHEREUPON, the jury came into open court at approximately 11:26 a.m.)

THE COURT: Yes, sir.

BY MR. PANATIER:

Q A couple more questions, Dr. Brody. Mesothelioma -- we were just talking about lung cancer. Mesothelioma, you said the -- the only, generally, accepted cause of mesothelioma in the U.S. is asbestos; is that correct?

A Right.

Q Does smoking cause mesothelioma?

A It does not.

Q Okay. And describe what we're looking at here in this Netter diagram.

A Right. So you remember in the previous slide in the cancer, I showed you that normal thin pleura. Well, this

is the pleura that has been replaced by tumor cells. And when you have these clones growing out, over time, they coalesce into this tumor that can completely cover and surround the lung, and, actually, constrict and cause the person not to be able to breathe.

Q With regard to your several decades of research and from what you have read, is it generally accepted that all of the fiber types can cause mesothelioma?

A Yes.

Q Now, are there a different level of potency between the different fiber types, generally speaking?

A Well, for causing mesothelioma, yes. I mean, there's no evidence I know that says that any fiber is more likely to cause asbestosis or lung cancer.

But for mesothelioma, the amphiboles -- that's crocidolite and amosite, typically -- are more potent. But that's on a fiber-per-fiber basis. That means that if all you're exposed to is chrysotile, chrysotile caused it. If all you're exposed to is crocidolite, crocidolite caused it. If you're exposed to a mixture, then they all participate.

Q All right. Is there any way scientifically, that you're aware of, to take one type of fiber or one exposure that a person had and say, well, that didn't play a role?

A You can't do that. It's like if I could -- well,

there are a lot of analogies like that. I mean, which sunburn caused your melanoma? You know, it's the same kind of thing.

Q Okay. And then, again, generally speaking, you talked broadly about background levels of asbestos versus occupational levels, which would be orders of magnitude, higher exposure levels. Would it be fair to say that for someone who has repeated, regular, frequent, and proximate exposures on an occupational level that each of those types of exposures would be a substantial factor in the development of their mesothelioma?

MR. TIVIN: Objection. Speculation. Foundation. Vague.

MR. YOUNG: Join.

THE COURT: Overruled.

THE WITNESS: Right. So think about -- well, the answer to your question is yes. In other words, every one of those exposures increases the dose. I mean, this is a -- these are dose-response diseases. And if I could use an analogy today.

BY MR. PANATIER:

Q Sure.

A We already established that cigarette smoking doesn't cause mesothelioma. But just take what happens in a lung cancer from a long-term cigarette smoker, right? They

start smoking a brand when they were a teenager. And then they switched to another brand. And then they're buying packs, and they're buying cartons. And, eventually, they get lung cancer 30, 40, 50 years later. Which brand did it? Which pack did it?

Every time you inhale a cigarette, you apply carcinogens directly to the target cells. Every time a person is exposed to asbestos, some proportion of those fibers reach the target cell. And there's no way to discount any of them.

Q And you're not saying that one fiber causes mesothelioma, are you?

THE COURT: Yes.

MR. TIVIN: Objection. Move to strike. Previous motion.

MR. YOUNG: Join.

THE COURT: Okay. Overruled.

BY MR. PANATIER:

Q Dr. Brody, you're not saying one fiber someone breathes in causes mesothelioma, are you?

A No, of course not.

Q And, to be clear, you're not an industrial hygienist; right?

A That is true.

Q Okay. And you're not saying that someone walking by

one time something having asbestos in it causes mesothelioma, are you?

A No. I'm not saying that.

Q All right. And lastly --

A We know -- you know, we know that a single fiber can cause genetic damage. But that doesn't mean if all you're exposed to is a single fiber that it causes cancer. I told you that multiple steps have to be accomplished.

Q I understand. And, lastly, from a scientific perspective, is there any known safe level of exposure to asbestos that you can say this is the level -- aside from background, which you've already talked about, this is the level that we know is safe and no cancer will occur?

A No. There's no level that's been established that is safe if it's above background.

MR. PANATIER: Okay. Thank you, sir.

Pass the witness.

THE WITNESS: You're welcome.

THE COURT: Cross-examination.

MR. TIVIN: If I may have a moment just to kind of move things around a little bit.

THE COURT: Yes, sir.

CROSS-EXAMINATION

BY MR. TIVIN:

Q Well, I suppose I can ask questions while I'm doing

it if you're -- is that okay with you, Doctor?
A However you'd like.
Q You've been testifying since about 1989?
A I had one case in '89. That's right.
Q And, currently, about 90 percent of your income comes from about testifying as an expert?
A That's right.
Q And you've already talked with Mr. Panatier about how much you make. And you've been making a couple hundred thousand dollars a year testifying?
A I have been, yes.
Q And this isn't the first time you've -- you've testified in South Carolina before?
A I have, sure.
Q Illinois?
A I have.
Q New York?
A Sure.
Q California?
A Indeed.
Q Would it be easier to list the states you haven't testified in?
A Do it however you like. People seem to be interested in what I have to say. What's the point?
Q What states haven't you testified in for plaintiffs

attorneys?
A I don't know. I don't keep track of that. Do you? I don't. Sorry.
Q There -- you testified in West Virginia for plaintiffs attorneys?
A Yeah. Put up the map, you know. We can go through it. But I've testified in a lot of states.
Q And those have all been on behalf of plaintiffs in jury trials?
A Well -- well, yeah. But including several manufacturers, including John Crane, who asked me to give exactly the same testimony that I gave here today. So these are companies who are plaintiffs. But there were companies who made asbestos and asked me to give the same testimony that I did here today.
Q Yeah. And the case against John Crane, there was no jury, was there?
A There, certainly, was a competent judge.
Q Would I be correct in saying there was no jury?
A That's correct.
Q In the case against John Crane, that was in a business dispute; correct?
A Do we want to talk about what these cases were about for John Crane?
Q My question is, it was a business dispute; correct?

A I'm not really sure what you would call it.
Q In that case, there wasn't an injured party. There wasn't a -- someone who was sick seeking compensation; correct?
A Well, there were a lot of sick people who were seeking compensation.
Q In the case that you testified in, was there a plaintiff that was a -- someone who was claiming that they were sick that was seeking compensation?
A Not in that case. But that's why we were there, because of people who were claiming injury.
Q And John Crane had put you on to put you on as an example of plaintiffs cases; correct?
A Yeah, sure. That's a good example, absolutely.
Q Okay. And you've testified for Simon Eddins many times before?
A Many times.
Q And in this case, I think you told the jury you didn't even -- you're aware that Mr. Seay was deposed -- were you aware that Mr. Seay was deposed?
A Well, I would have assumed so. But I didn't --
Q And were you aware that he had given several depositions?
A I really didn't ask. I'm not sure.
Q You didn't review any -- you didn't review any of

Mr. Seay's prior testimony before coming here?

A No. That's not going to have anything to do with my testimony.

So Mr. Seay, I was asked to assume, has this cancer mesothelioma --

Q Sir, if you could just answer my question.

A I am answering your question.

Q The question was, did you review any of the materials?

A No. But I was asked to assume --

MR. TIVIN: Your Honor, I would ask the --

THE COURT: Well, he's got a right to explain his answer.

THE WITNESS: Thank you, Your Honor.

So I was asked to assume that there was a diagnosis of mesothelioma. So my testimony then explaining how asbestos causes mesothelioma would be directly applicable to Mr. Seay, whether I read any of his depositions or not.

BY MR. TIVIN:

Q But -- right. Your -- your -- the testimony that you're giving here is the same testimony you give in every case that Simon Greenstone brings you; right?

A Sure.

Q And it's the same slides in every -- in every case?

A Well, just like when I teach the medical students, I

use the same set of slides. I don't know why I'd change. I mean, you know, the idea is for the jury to understand what the concept is. And I think those slides help to do that.

Q I guess my thing is you don't do anything special for this case that you do for any other case; correct?

A That's correct.

Q And you're not an industrial hygienist?

A Still not.

Q And you're not someone who's, actually, studied asbestos products to see if they release fibers?

A I have not. That's correct.

Q And that would be outside your area of expertise?

A That's right.

Q And you would rely on an industrial hygienist or a material scientist to testify -- well, strike that.

An industrial hygienist is someone who -- can you tell the jury what they are?

A So this is a field that, typically, a person can be certified in to study workplace conditions, who gets exposed to what and what the agents are that are, actually, in the workplace that can cause people illness or injury.

Q And a material scientist is someone who, actually, studies different materials and studies their makeup, and

in the terms of asbestos-containing products, also, can see if they release fibers during activities?

A Sure.

Q And you would you defer to an industrial hygienist as to whether a product, actually, released fibers and the amount of the released fibers?

A Of course.

Q And you would, also, refer to a -- well, strike that.

And for this case, were you told anything about Mr. Seay's actual exposures?

A No.

Q For this case, were you -- did you investigate anything -- were you told any information about what products from John Crane may be involved?

A No.

Q Or anyone else?

A No.

Q Because that isn't important to you as to how -- the products he was exposed to. It's whether he developed mesothelioma?

A Yeah. And how that happened from asbestos, right.

Q What's epidemiology?

A So that's the study of populations. Epidemiologists establish who gets sick in a population and from what.

Q And then as a layperson, epidemiology is how we,

initially, link different agents to different diseases?
A That's what I tried to say, yes.
Q Well, okay. And, for example, when we discovered that asbestos caused -- is linked to mesothelioma, that was through epidemiologic studies?
A Yeah, of course.
Q And with regard to mesothelioma, I believe that was Dr. Wagner. And I think it was 1960?
A Right.
Q And in 1960, Dr. Wagner discovered there was a link between people who worked in a crocidolite mine and worked -- and lived around that crocidolite mine --
A Right.
Q -- in the development of mesothelioma?
A Right. That's the environment he was in. He was working at a small hospital near a mine, a crocidolite mine. And in came these very rare -- these cases of this very rare disease, mesothelioma. And the common thread was they were all exposed either at the mine or living in the community.
Q And that was a crocidolite mine in South Africa, I think?
A Exactly.
Q Now, they've done epidemiologic studies in -- well, strike that.

Are you generally aware of the epidemiologic studies that have been done on asbestos and its ability to cause disease?

A General principles, sure.

Q And you've read the literature, and you're familiar with the literature?

A Sure. I mean, that's where scientists like myself get their cues as to where to go, I mean, where are the problems that we need to understand. And the epidemiologists set that up, sure.

Q And one of the -- have there ever been any epidemiologic articles -- well, strike that.

There have been epidemiological articles that have linked the use of thermal insulation -- asbestos-containing thermal insulation, and mesothelioma; correct?

A Sure.

Q And those were -- one of those was done by a guy named Dr. Selikoff?

A Right.

Q And he is a respected -- he was a respected physician in asbestos-related disease?

A Certainly.

Q And he, actually, linked the use of people who use thermal insulation all the time, and the development of

mesothelioma, and other asbestos-related diseases?
A That's right.
Q Have there been any epidemiologic articles that link the use of gaskets to any asbestos-related disease?
A I don't know if that's been done, actually. That sounds kind of specific to me. I mean, the concept of a product that releases asbestos leading to a mesothelioma, that's pretty -- that's established.

Now, whether or not gaskets, per se, have been studied, I really couldn't say.
Q But thermal insulation has been studied. And one of the things they noted in the thermal insulation articles is that those people have extremely high doses; correct?
A Sure.
Q And one of the things that's important when you look at mesothelioma, and any other asbestos-related disease, is the dose?
A As I say, they're dose-responsive diseases, sure.
Q So the lower the dose, the lower the risk?
A Exactly.
Q And in your case, you believe that if someone has a background level of exposure that there's zero risk?
A Well, I don't think I've ever said zero risk. I've said that we don't know of a measurement. I mean, I don't know that we know that there -- that there is a level in

the background which we can say causes disease. That's not been shown.

But you can't say there's zero risk. I mean, there are some cases where you don't know the cause of the mesothelioma. It could be somebody highly susceptible that got a background dose. So, I mean, I can't tell you that background causes disease. But I can tell you that there -- that it's not zero.

Q Well, one of the things we've got to talk about, and I don't know if it was really discussed, is the way that we measure dose -- asbestos -- we did measure in concentration, the concentration of asbestos in the air; correct?

A Well, in order to get a dose, you have to multiply that concentration by the time the person is exposed.

Q And asbestos concentration is usually measured in something called "fibers per CC"?

A Right. That's what I was explaining to the jury. The CC, this cubic centimeter, and what the concentration is in that, you combine the time, multiply it by that concentration, and you get what you're talking about, fibers per CC.

Q Right. And it's your opinion that someone who's exposed to .01 fibers per CC all day, every day is not at an increased risk for the development of mesothelioma;

correct?
A Well, I think you picked that out of a -- out of a transcript somewhere. I'm trying to say that .001 is the lowest -- is the highest background I've seen. And I wouldn't expect that to cause disease.
And I think somewhere along the way we got a misprint, or I misspoke, or something. I don't think it's .01. I've been trying to correct that for a while. But you still like .01, so I guess we'll hear about that.
I'm sure it's in the transcript. I don't doubt that.
Q You testified two weeks ago in California?
A Right.
Q Two weeks ago in California, did you give the -- were you asked these questions, and did you give these answers?
"And would you agree, as far as you know, if someone is exposed to levels of .01 fibers per CC or lower -- are you with me?"
Answer: "Yeah."
"Every day, all day, that person is not at an increased risk of developing mesothelioma?"
Answer: "Not that I know of. That's correct."
A Yeah. That's fine. I mean, if we're talking about the -- the highest background that I've heard of, I'm saying it's .001. If you're asking me does .1 cause disease -- .01 cause disease, I don't know that there's

any evidence that it does. I haven't seen that.
Q But you were asked those questions two weeks ago, and that's what you said?
A I -- like I just said, yes.
Q Now, you're, also, aware that Dr. Selikoff wrote a book -- or edited a book called, Asbestos and Disease?
A Yeah. I have that.
Q And you find this book to be authoritative?
A Of course.
Q And you find Dr. Selikoff to be authoritative?
A Of course.
Q And this book was written in 1978?
A '78, yeah.
Q And in this book Dr. Selikoff edited, there were -- there's a portion of the book where they talk about substitute products; correct?
A I mean, if that's what it says --
Q Do you want me to --
A No. I -- whatever you represent that says, I'm sure you're right. You know, I don't keep track of all the sections of that book.
Q And in the section of the book, there's a chart where they talk about progress and introducing a -- substitute materials. And if you'd like --
MR. TIVIN: Can I use the ELMO? May I use the ELMO,

Your Honor?

THE COURT: You certainly may. I don't --

MR. PANATIER: Yeah. Go ahead.

MR. TIVIN: Will you show me how to turn it on?

MR. PANATIER: It's on.

(Pause.)

BY MR. TIVIN:

Q Sorry. I'm a little bit technologically challenged. This is on Page -- and I need glasses -- 466. Can you read that up there?

A Sure.

Q And it's -- there is a chart. And it's three -- there are three columns in it. And one says "application." Do you see that in the upper left?

A (There was no response.)

Q Up. Up. There you go.

Do you see that?

A Sure.

Q And then it says "asbestos material" in the middle?

A Right.

Q And it says "progress and introduction of substitute materials."

A Okay.

Q Now, you would agree with me on the one right --

A Do you want this --

Q No. I can just point.

Right here. Do you see what that says?

A It says, "high temperature joining" -- "jointing and packing materials."

Q And jointing materials are gaskets; right?

A That would be a good question for a material scientist, an industrial hygienist, which you've already established I am not.

Q You don't know? You don't know?

A I do not know. That is correct.

Q Sure. And for jointing material, it says, no health hazard in forms used in shipyard applications. Do you see that?

A I see that.

Q And that's what Dr. Selikoff wrote about jointing materials in 1978?

A That's what he said.

Q And you believe that what he wrote in 1978 was -- well, strike that.

You believe his book was new and novel about asbestos; correct?

A Well --

Q Introduced new and novel ideas about asbestos?

A Well, I don't know if that book did that. I mean, it reviewed a lot of materials, a lot of things that were --

that are important in the field. Whatever in there was informative, certainly.

Q And you believe in the '60s -- strike that.

In the '60s, 1960s, that's when it was known in the medical literature that exposure to thermal insulation could cause mesothelioma?

A Well, I think in the '60s and beyond, it became clear that asbestos, under a whole variety of conditions, whether it's insulation or other agents or other places can cause mesothelioma.

Q And you agree that only when sufficient fibers accumulate on the pleura -- strike that.

Only when the fibers overwhelm the carpet cells is when they can get to the pleura?

A No. I've never -- I'm sure you cannot find anywhere that I said that. So there's no overwhelming of anything. I mean, what you have are fibers that can come in two at a time or they can come in dozens at a time. And some proportion of them are taken under the carpet and reach -- and some proportion of those reach the pleura. So I don't know why you said "overwhelm." I didn't say that.

Q I'd say that that's a poor choice of words. I apologize.

You testified on direct examination, I believe, that -- about a substantial factor. You were asked a

question about whether something was a substantial factor, I believe?

A Yes.

Q In any of the hundreds of medical articles that you've written, have you ever written about something being a substantial factor in the development of mesothelioma?

A No. I don't, typically, use that term. I mean, I've been asked in a courtroom what I think substantial means. And I say if it contributes to a disease that incapacitates a person, then I consider that substantial. But I don't use that as part of my scientific lingo.

Q In any of the hundreds of articles you've written about the causation of mesothelioma or any other asbestos-related disease, have you ever wrote about the cumulative dose causing the disease?

A Well, no. And I don't think you -- I'm not sure you really find that. Because it's clear that every time there is an exposure that you increase the dose from that accumulation of whatever the person was exposed to. I'm not going to sit there and write cumulative dose. That would --

Q Can you name me --

A -- somebody would laugh if I tried to say that.

Q Can you name me any article that anyone has ever

written and published in the medical and scientific literature that says the cumulative dose -- all of those exposures cause the disease, anyone ever who's written that?

A No. For the same reason that I just explained. It -- there are certain things in science that are intuitive. You don't have to write. I don't write the -- there are a lot of things I haven't said.

And I'm sure that I haven't said, nor has anybody else, that in order to produce a dose, you have to have multiple exposures. And then all of those exposures -- some proportion of those accumulate to form your dose.

Why would I -- you know, it just wouldn't make sense for me to say that when it's so obvious.

Q When you talk about dose, you're talking about risk; right?

A You can.

Q Dose-response diseases are -- as you increase the dose, you increase the risk; correct?

A Sure. And that happens as you get the multiple exposures that accumulate to produce that dose.

Q And risk is different than causation?

A Sure, sure. Here you have a -- here you have a hundred percent risk --

Q Right. So it's a hundred percent risk. So it's a

different question as to whether you have an increased risk and what caused the disease; correct?

A You know, I don't think it makes any sense to try to separate those. Because as the person's dose increases, it increases their risk, as we just talked about. Whether I said that, specifically, in a paper or not, it increases the dose. And some people reach that hundred percent point. And that's what we have here.

Q But when you want to talk about what exposure, actually, caused the disease, medicine hasn't really figured it out as to which fiber caused it, which actual breath of asbestos caused it. They don't know. So it's an assumption that they make; correct?

A Well, it's exactly the analogy I gave you for cigarette smoking, exactly. Which brand would you choose? You can't do that.

And if you do an experiment like I have and other investigators do where you have cells in a dish and you add fibers on one day and you add fibers on the next day, you know, which fiber caused the genetic damage? You know, it's the same -- it's exactly the same issue. Nobody is trying to separate out an individual fiber. Because they all contribute to causing that person's disease.

Q Because it isn't important to you which fiber caused

it. It's important to you that it occurred?
A I'll agree with that.
Q And the same thing would go to the development of the disease. You don't care -- it's not important to you what his dose was. It isn't important to you to know what products he was exposed to. It's important to you to know that there was asbestos somewhere and he got disease?
A Yeah. I mean, my role here, and it has been in science, is to understand the process. And that's what I tried to explain to the jury.
Q And the overall tenor of your research isn't does asbestos, or does a product, or does anything else give off anything to cause disease. Your -- the tenor of your research is more on the -- what happens at the cellular level?
A I agree.
Q You don't -- it doesn't matter to you if it's a -- if he was exposed for a day, a week, or a year. That part has nothing to do with your research?
A I agree.
Q And it has nothing to do with your research about whether something was a substantial cause or any other cause. That really has nothing to do with anything you've researched?
A Well, we talked about substantial. I mean, I -- it's

substantial if it adds to the process that causes disease. But that's not the scientific term.

Q Right. And that's not -- that's not anything that you -- that's not what you're researching. You're researching what happens at the cellular level. You're not concerned with who did what?

A I agree with you.

Q And you've never studied who did what?

A I agree with you.

Q And you don't know anything about whether John Crane gaskets that they sold did anything; right?

A I don't know that. And I certainly didn't testify about that.

Q But I just want to make sure the jury is clear that that isn't what you're here to talk about. You're not here to talk about John Crane doing anything, John Crane causing anything. You're here to talk about Mr. Seay had mesothelioma, and it was caused by asbestos?

A Yeah. And I didn't talk about any of those things. But I will tell you that if it's clear that a product -- whatever their product is releases asbestos at levels above background, then it contributes.

Q I just have one final question. It's just an intellectual curiosity. And you used the smoking example. If you're breathing asbestos in at background -- and you

testified that we have millions or billions of fibers in our lungs -- why don't those contribute?

A Well, I can't say that they don't. It's just that what we know is that at that level, that's not sufficient in and of itself to measure any increased risk. So that's -- that's -- I didn't say they don't contribute. I'm saying that you can't in and of themselves show that they cause risk.

Q Why don't the -- why don't those millions and billions of fibers in your lungs add to your cumulative dose that you just talked about that you can't take anything out and everything causes it, increases the risk -- why don't those millions or billions of fibers increase the risk?

A Okay. Because there's not enough to increase the risk, apparently. In other words, I'm not saying they don't increase the risk. So -- so if you -- it's like this. If -- I told you that you can get a billion fibers into a thimble; right?

So if you took my lungs or yours and you spread them out across the floor and you took a pepper shaker and sprinkled them around the floor, you can get millions of grains of pepper. I mean, but that's not enough to cause disease. That's the point.

But, sure, they're there. And the background fibers

are there. And it doesn't mean they don't -- they're not part of the cumulative dose. They are.

But if you start adding -- if you start looking at the fiber dose from a product, like an industrial exposure where you get .1 or 5 fibers per cc, whatever, we know that that's enough to cause disease.

So why are we talking about accumulation of the background, which does not cause disease?

MR. TIVIN: Okay. No further questions.

REDIRECT EXAMINATION

BY MR. PANATIER:

Q Okay. So have you heard of the concept of a trick question --

THE COURT: Hold on one second.

MR. COLLIER: Your Honor, we don't have any questions.

MR. PANATIER: Okay. They told me they didn't have any questions.

THE COURT: I'm sorry. I didn't know that.

Go ahead.

BY MR. PANATIER:

Q You've heard of the concept of a trick question; right?

MR. TIVIN: Objection to form.

THE COURT: Sustained.

BY MR. PANATIER:

Q All right. So you were asked about, have you heard about epidemiological studies of insulation workers?

A Right.

Q And that they were shown to be at an increased risk for mesothelioma by virtue of working with insulation; right?

A Right.

Q And that certainly is in the literature; is that fair?

A Yeah, of course.

Q Okay. And then you were asked, well, are there any epidemiological studies of gasket workers; right? Do you recall that?

A I was.

Q Do you know whether or not there is any trade that exists that, I'm a gasket worker, that's all I do?

A I don't know that. And I, also, didn't know if anything like that had been studied, no.

Q Okay. And you were, also, asked a question -- let me just tip that over.

From a scientific perspective, you said that, look, it's a cumulative dose disease. The fibers that are inhaled at an occupational level, they contribute; right?

A Right.

Q Okay. And you were asked, well, you don't know, specifically, what product they came from; right?
A Right.
Q Now, you've looked at a lot of asbestos under the microscope; fair?
A Sure.
Q And let's say you look at it. Let's say you zoom in really, really far, really far -- millions of times, hundreds of thousands of times, whatever, and you see an asbestos fiber; right?
A Right.
Q Have you ever seen this?
A I can't see him, but I know he's writing.
Q I'm going to show you.
A I know you're writing somebody's name on there.
Q Have you ever seen that?
MR. TIVIN: Objection to form. Argumentative.
THE COURT: Overruled.
THE WITNESS: No, of course not. They all look the same, act the same. The lung does not discriminate. Let's put it that way. The lung does not -- the lung can't tell where a fiber came from.
MR. PANATIER: May I see your book?
MR. TIVIN: Yeah.
MR. PANATIER: Thanks.

BY MR. PANATIER:

Q And you were shown the Selikoff [inaudible] from 1978?

A Right.

Q When you publish a -- paper, in a scientific paper -- I've got some laying around. But sometimes you see a number after a sentence?

A Sure.

Q What is that?

A Well, it's, typically, called a reference. It means the -- that's where you find the information that I just stated.

Q Okay. And so one of the things that you were asked about was the statement in this 1978 book that was a -- it was a table that they put in here about different -- different products; right?

A Right.

Q Okay. And one of those was -- I'll zoom in a little bit -- high temperature jointing and packing materials. And I'll ask you to assume -- let's just assume, for the question, that jointing means gaskets. Okay.

A Yeah, yeah.

Q And here, they said, No health hazard in forms used in shipyard applications. Does it say what, specifically, they're talking about?

A No.
Q Does it say whether or not they're just dropping in a new gasket or grinding one off?
A I didn't see anything like that.
Q In fact -- and, lastly, do you see one of those little numbers?
A I didn't see any numbers. I didn't see any references.
Q Okay. And then let me take you to the page before. Well, this is Page 463 or 464, right at the top, Because of the manifold ways in which asbestos is processed or used, the specific methods appropriate to control will vary with the situation.

And my question for you is, sir, you already said you weren't an industrial hygienist. But, obviously, the amount of asbestos that's released depends on what the worker is doing; is that fair?
A Of course.
Q Okay. And then for everything -- all of the science you talked about with this jury, have you published on every bit in the peer-reviewed literature of what you talked about today with this jury?
A Yes. Although I did say that I didn't do the studies that analyze the lymph nodes. Those are colleagues. Those are colleagues. And I reference those kinds of

papers all the time.

MR. PANATIER: All right. Thank you, sir.

No further questions.

THE WITNESS: You're welcome.

RECROSS-EXAMINATION

BY MR. TIVIN:

Q Did you see any -- just one question. It says, Made by John Crane. And we're definitely John Crane, Inc. Did you see any that said John Crane, Inc., on there?

A No.

MR. TIVIN: Okay. I don't have anything else.

MR. PANATIER: May the witness be excused?

THE COURT: All right. Thank you, Dr. Brody.

THE WITNESS: You're welcome.

THE COURT: Okay. Thank you.

Ladies and gentlemen, we're going to go ahead and break for lunch. Just be back in the jury room at 1:15. And we'll get back underway at 1:15.

Thank you.

Don't talk about the case. Don't do any outside investigation, and continue to keep an open mind.

(WHEREUPON, the jury was excused from open court at approximately 12:03 p.m.)

THE COURT: Okay. See you back at 1:15.

MR. TIVIN: Your Honor, I have a quick question. The

only thing we're doing after the -- well, the first thing we're doing after the break is playing the video.

THE COURT: Okay.

MR. TIVIN: Would I have permission to possibly not be in the courtroom during a portion of the video so I can accomplish some other work on this case if I have someone else representing John Crane that's sitting at the table? I would be in the hallway.

MR. PANATIER: I don't care. It's fine with me, Your Honor.

THE COURT: You're not going to get lonely?

MR. PANATIER: I'm not what?

THE COURT: You're not going to get lonely?

MR. PANATIER: I do have those tender moments, Your Honor.

THE COURT: That's fine. That's fine.

MR. TIVIN: I just wanted to ask the Court's permission before I --

THE COURT: That's fine.

MR. TIVIN: -- did anything.

THE COURT: Okay. We'll see you back at 1:15.

(WHEREUPON, a lunch break was taken.)

(WHEREUPON, Court's Exhibit No. 1 was marked for identification and admitted into evidence.)

THE COURT: I apologize. I got delayed.

Anything before we bring the jury in?

MR. PANATIER: Just the video that is going to be played, we have the transcript of the exact testimony that's going to be played. We'd like to mark that as -- it's been marked as Court's Exhibit No. 1. And we'd just attach that to the record so that the court reporters don't have to take it down.

THE COURT: Okay.

MR. TIVIN: No objection, Your Honor.

THE COURT: It's not going back to the jury?

MR. PANATIER: This is not going back to the jury. It's just the transcript.

THE COURT: Thank you.

You can bring the jury on in.

(WHEREUPON, the jury came into open court at approximately 1:39 p.m.)

THE COURT: Somebody is interested in taking notes, apparently.

Okay. It's perfectly fine.

Just remember, if you want to take notes, we'll be glad to provide you with the paper and a pen. Just remember that part of your job is to assess the credibility of the evidence. And don't get so engrossed in taking notes that you don't pay attention to the witnesses while they're on the stand.

Your notes can't be shared with others. And they certainly don't trump anybody's memory who didn't take notes.

But you can take them, sure. If anybody else wants to, we can give you pen and paper.

All right. Yes, sir, Mr. Panatier.

MR. PANATIER: All right. Your Honor, at this time, the Plaintiffs call the video -- we call Dennis Seay by video deposition.

THE COURT: All right.

MR. PANATIER: This is from January 17th, 2014. It includes our excerpts and those that the Defendant wanted to play -- the Defendants wanted to play.

(WHEREUPON, Court's Exhibit No. 1 was played in open court.)

MR. PANATIER: Your Honor, that's the end of the video deposition. And I understand that this is probably a good time for a break. There's some stuff to read in, too.

THE COURT: All right. We'll take about a 10-minute break.

Thank you.

(WHEREUPON, the jury was excused from open court at approximately 3:07 p.m.)

THE COURT: Yes, sir.

MR. TIVIN: I just happened to be standing here, Your Honor, but I do have a question.

THE COURT: Okay.

MR. TIVIN: Would you -- do you want -- we're going to start reading the depositions. Do you want me to read from here or there, or do you care?

He's, obviously, going to be the witness.

THE COURT: Who?

MR. TIVIN: Simon is going to be in the witness.

THE COURT: Oh, okay.

MR. TIVIN: We're reading. So did you want me to be at the podium, or from the table, or do you care? Because this is going to be long. I mean, I'll stand at the podium. It doesn't matter to me.

THE COURT: And this is the deposition of?

MR. TIVIN: Mr. Seay.

MR. YOUNG: Mark, I think you should do it from the podium, but I'm not doing it.

MR. TIVIN: Then you, by all means, stand up.

Here is our tentative -- do you want a copy of the transcript?

THE COURT: It doesn't matter to me. So whatever you want to do.

MR. TIVIN: Okay. Do you want Simon -- Mr. Purnell in the witness box now, or do you want to call him up?

I just -- I've never been in your courtroom, Your Honor. And some judges handle it differently.

THE COURT: It's not any big deal. He can come on up.

Are you ready for the jury?

And this one is how many pages?

MR. TIVIN: A lot. It's every page of that.

THE COURT: Do you know how long it's going to take? Do you have any idea?

MR. TIVIN: We've -- I just -- we just got the final version of it this morning. I believe it's going to take, at least, the rest of the afternoon.

THE COURT: Okay.

MR. YOUNG: Shorter than if I was reading it.

THE COURT: You think so. I don't know. The slowest would probably be me reading it.

(WHEREUPON, the jury came into open court at approximately 3:25 p.m.)

THE COURT: All right. Ladies and gentlemen, my understanding is we're going to have some additional testimony from Mr. Seay's deposition.

I just want to instruct you, in case you don't already know, that a deposition is simply an out-of-court statement by a witness that's made under oath before trial. It is admissible under the rules of evidence and

the law, and certainly to be given the same weight as live testimony.

So with that, we'll proceed.

And, yes, sir, Mr. Tivin.

MR. TIVIN: Thank you, Your Honor.

(WHEREUPON, the deposition of Mr. Dennis Seay was read into the record by Mr. Mark Tivin asking questions and Mr. Simon Purnell answering.)

EXAMINATION

Q Let's just start at the beginning. What is your full name, Mr. Seay?

A Dennis Delane Seay.

Q All right, sir. So when you left school in the eleventh grade, what did you do?

A I went to work at the textile shops.

Q And in the upstate up here, there were lots of textile facilities?

A It was a machine shop. We filled rolls and stuff like that for the textile industry.

Q Sure. Now, was this attached to a single mill, or was this something that served the textile industry generally?

A It just served the textile generally, like rolls, if somebody wanted some rolls. I was a machinist -- a machinist helper when I went to work there. But at about

six months, they reclassified me as a machinist. And then I was on my own from then on as far as building rolls, or whatever. Mostly metal work.

Q Now, let me see. What year was it when you got out of high school in the eleventh grade?

A I think it was around -- I want to say '61 or '62.

Q '61 or '62. All right, sir. Was this -- we got a work history sheet that your lawyers filled out for us.

A Yes, sir.

Q I think maybe there's an error on it. It started at a place called Black Manula, which I assume is Black Maneular?

A That is Black Maneular. It used to be the old textile shops. Black Maneular bought it out and changed it to Bristol Metals.

Q Yes.

A Black Maneular owned Bristol Metals. So they changed the name of it to Bristol Metals. And they switched over from the textile business to building tanks and stuff like that, stainless steel tanks.

Q All right, sir. So did this section of Black Maneular or the machine shop, did they have a specialty? You mentioned they had -- they made the big rolls?

A Right.

Q Describe the size of those rolls, because I'm not

sure most of us know.
A They would range anywhere from 3 inches to 20 inches in diameter.
Q And they were part of the textile mill operations where they, actually, roll out the cloth or -- and the yarn, or whatever they're making?
A Right. Right.
Q How long did you stay there? Well, I'll just ask you. According to our work history that we got, they say that you were there from '62 to either '66 or '67.
A Right.
Q Does that sound right?
A Uh-huh.
Q Do you remember when you left?
A I left there around that time and went to -- I worked at Precision Bearing twice. I left there and went to Precision Bearing, and went there as a machinist and ran a lathe there up until '69. And then I went to Hoechst Fibers.
Q So then you went to Precision Bearing '67 -- maybe the tail end of '66 to '69. And, again, you're primarily in the machine shop?
A Right.
Q And you're working on a lathe?
A Right.

Q What were you, actually, making?
A The same thing, rolls.
Q Still making rolls?
A Right.
Q All right. So, again, when you're at Precision Bearing from '67 to 69, is there any asbestos exposure?
A No.
Q Then when you left Precision Bearing in '69, that's when you went to work at Hoechst Celanese?
A I went to Hoechst Celanese.
Q And the -- who were you working for?
A Daniel's, Daniel Construction.
Q You got on with Daniel's?
A Right.
Q All right, sir. How did you get that job?
A I just went over there and applied for it. At that time, it was a good bit higher-paying job. But I had to go to work as a millwright helper. But I worked myself up within about six months to millwright.
Q All right. And, according to our work history sheets, you were there at Hoechst Celanese from about 1969 to about 1978. So close to 10 years, nine years, let's say.
A Right.
Q Now, what were you doing out at Hoechst Celanese?

A Performing maintenance work. That was if something broke down, I would fix it on regular routine PM maintenance work on lines.
Q "PM" being preventative maintenance?
A Right.
Q All right, sir. So was there any new construction going on out there at Hoechst Celanese?
A Yes.
Q Were you involved in that?
A Not really. There was -- while I was there, they built two new lines, 13/15. But I wasn't involved in the construction of it.
Q Okay. You were in maintenance for the existing plant?
A Right, the old plant.
Q Sure. And what was the old plant making?
A Fiber.
Q So -- so it's --
A Polyester.
Q It's just a pure synthetic fiber plant?
A Right.
Q All right. Did they have machine shop facilities there?
A Yes, they did.
Q And was that your primary job, based on your --

A No. I worked out at the machine shop on several jobs, but that wasn't my primary job. My primary job was a millwright out in the field.
Q And as a millwright, at this point, when you were working for Daniel, Daniel is a nonunion; right?
A Right.
Q So as a millwright -- as a nonunion millwright with Daniel out there at Hoechst Celanese, what kinds of equipment would you have been maintaining?
A Just about any and everything in the whole plant from the basement -- from the beginning of a -- they made chemicals at the DMT plants and the chips. And then they'd load the chips over to Hoechst Celanese. From that point on to the finished product on the stretch line was our work area.
Q So you were not over at the DMT plant, but you were as soon as the chips got to Hoechst Celanese?
A Right. But we would work at the DMT plant on shutdowns. They had shutdowns about once a year.
Q It was --
A They would pull us -- some of us workers out of Hoechst Celanese and work the shut-out.
Q Sure. And were those shutdowns always carefully timed to ruin your holidays?
A Yeah, most of the time.

Q They even ran them on 4th of July or Christmas; right?
A Christmastime.
Q Now, so during the period that you were out there at Hoechst Celanese doing maintenance work, not really in the DMT area except for shutdowns, how many workers were in there from Daniel, rather than Hoechst Celanese?
A Total number of workers back in the early '70s when, you know, the fiber industry was booming, there were probably 500 maintenance workers, about 4,000 production workers.
Q All right. And were all -- the 500 maintenance workers, were they all Daniel?
A Yes.
Q Were there any Hoechst Celanese employees that were maintenance?
A No.
Q They were all production?
A Right.
Q So they pretty much contracted out their entire maintenance --
A Right.
Q -- program to Daniel?
A Everything.
Q Okay. And out of the 500 maintenance workers, how

many were millwrights like you?
A Oh, probably -- a rough estimate would be probably 350. And then the rest would have been fab shop workers and machinists.
Q So they had a separate valve shop, sort of more specialized?
A Well, on the valves or on mostly anything, they had a PIV and valve shop. I worked in there probably eight months by myself.
So most of the work was performed by each individual. You go in -- you go in this morning. If they got a line down, they pull PM on that line. And then whatever job was assigned, that's where you went and done.
If it was repair this line, and you see three or four valves on there that need to be replaced or the packing and all replaced, then you pull the valve out and you do that.
Q That's your preventive maintenance?
A Right. And then you'd proceed on down the line catching whatever you had to do.
Q And if you had gone out to that Hoechst Celanese facility in those days in the boom years, how many acres would it be?
A Oh, I'd say they probably had -- an estimate, I'd say they had well over 100 acres in that facility, if you

count all the way down to the river. Because their property line went all the way down to the Pacolet River, which is a good ways from Hoechst Fibers.

Q So the building site must have been enormous?

A It was.

Q All right. So we were talking -- before we kind of got off track, we were talking about the buildings out there. We got the filament building. We got the poly building. You said you had your area, which was -- what was the name?

A Which was the staple, staple A and B, and then the stretch line.

Q So that was all together under one roof, staple A and B and stretch line?

A Right.

Q All right, sir. In addition to the filament building, staple stretch building, and the poly building, any other buildings?

A Well, you had the DMT plant.

Q The DMT plant, which you worked on shutdowns?

A Right. And I worked in the poly building a couple of times on shutdowns, not all that much, just some. That was putting packing in reactors.

Q Did you ever work in the filament building?

A No. Huh-uh.

Q So never worked in the filament buildings. Your main area is what we're calling the staple stretch building?
A Right.
Q A couple times, on shutdowns, you were at the poly building. And maybe once a year you'd be in the DMT build -- plant for a shutdown?
A Right.
Q Any other buildings out there? Is there an office area separate?
A Well, you had what we called the white house, where all the engineers and all stayed at up on the hill.
Q The white house with the engineers. Did you ever work up there?
A No. But I've been up there several times.
Q Just going up to talk to an engineer about some issue?
A Right.
Q Are there any separate pumping stations or pump buildings?
A Yeah. But I wasn't involved. And you had some main pumping systems at different locations that was out of my work area. So I really wasn't involved with that.
Q We'll call them pump buildings, but you didn't work in them. Any other buildings that you can think of out there that are in this pretty sizable plant?

A Not that I can recall, other than the supply room. We had a pretty huge supply room.
Q So there's the separate centralized supply area?
A Right.
Q Tell me about that. Was that run by Hoechst Celanese or Daniel?
A Hoechst Celanese.
Q So the supply building -- and did it stock supplies for everything out there at the plant?
A Everything.
Q How'd that work?
A Well, that's like if you're working out on the line, you're working on a PIV or a valve, and, say, it's a Crane valve and you needed a set of gaskets and packing for that particular valve, you get your number off the valve and you go up to the supply room and give them that number. And they go back there and get you a kit.

Or if you wanted to replace the whole valve, they get you a new valve, or you would get a kit and you would replace the packing, or whatever. That's how it worked.

On everything else that's on your gearboxes that's on everything, they kept the inventory of spare parts for just about every part in that whole plant that was in the production line.
Q Because you don't want to have to -- you don't want

to have any downtime?
A They got that five, six, $8 million worth of spare parts out there.
Q Anyway, so you're assigned to different people doing different tasks around the plant during the six-month help period. What kind of -- what different kinds of jobs did you learn how to do?
A We were -- just everything concerning the plant site that I worked in. No person had a particular job that he did every day. I mean, you were all over that plant.
Whenever a breakdown was or a PM being performed, that's where you would be working. You would like to be working on valves today. You'd like to be working on gearboxes tomorrow, PIVs the next day. You like to be working on sunflower wheels, anything, anything concerning the plant.
Q So you had to be capable of working on like gear machinery, gearboxes, transmissions, chains, pulleys, rollers, valves, piping systems, all those things?
A Uh-huh.
Q That's a "yes"?
A Yes.
Q But, occasionally, you said you would pick up a new piece of equipment from the storeroom and put it in; right?

A Right.
Q And that would be to replace something that was just -- there just wasn't time to repair it?
A Right.
Q For some equipment, maybe even for most, the storeroom would have a stock of replacement equipment; right?
A Right.
Q Now, was the stuff in the storeroom that was the replacement equipment, had that been refurbished by Daniel folks out there, or was it brand-spanking new from the factory?
A New from the factory.
Q So they just ordered new parts or new equipment and just stacked it?
A Right.
Q And Hoechst Celanese did all the ordering?
A Yes.
Q And there was like a Hoechst Celanese employee who kind of ran the supply room?
A Yes.
Q Do you remember his name, by any chance?
A No, I don't. He was from Germany, the fellow that ran the supply room. And I can't think of his name right now.

Q Okay. And when you went to the supply room, was it almost like a store where you go up to the counter?
A Right.
Q And you would tell them that you want -- what you wanted, and he would go in the back and get it for you?
A Yes, sir.
Q When you were first learning the ropes when you were out there as a helper out there at Hoechst Celanese, we talk about -- we've talked about millwright. And we've talked about people who worked in the fab shop?
A Yes, sir.
Q Who would fabricate metal, and piping, and such? Was there an insulator shop?
A There was an insulator group.
Q Were they Daniel, as well?
A They were Daniel employees.
Q And did they have their own shop?
A Yes.
Q Do you know any of those guys? Did you ever work with them?
A Well, I was around them, but I didn't work with them.
Q And these are the people who had been insulating those pieces of pipe or whatever out there that needed to retain heat; right?
A Yes.

Q So was some of -- so was -- some or all the pipe out there at Hoechst Celanese, was it insulated?
A All of your pipe was insulated, your chill water pipe, your DOWTHERM line and your steam lines, and all that was insulated.
Q So you did have some DOWTHERM piping?
A Right.
Q Were you ever involved in taking a vat apart?
A Yes.
Q What was that kind of like -- was that kind of like I was discussing before? You've got DOWTHERM on the outside -- well, DOWTHERM is -- is in the pipe. And then there's some -- there's another pipe that goes inside of it that carries the --
A No.
Q This is just purely a pipe that carries DOWTHERM?
A Right.
Q Where was the DOWTHERM being pumped to?
A It was being distributed to -- you had deicers. You had reactors with melted polyment in it. It was being distributed to some of those. It was being distributed to all of your spin beams. That's where you pop product out. It goes through the deicers. It comes back to your spin beam and goes down. And that's when you turn it into a rope fiber stage.

And the spin beam was heated with DOWTHERM. And that -- your polyment went through packs and comes out those little-bitty holes and spaghetti-like strings, and comes down in this cooler, and run over a finish process, and then over the sunflower wheels into the tubs into the stretch line.

Q Understood. So you've got water lines. You've got steam lines. You've got DOWTHERM lines. You've got process piping. And the insulators would have insulated these lines?

A Yes.

Q Did you ever help insulate any piping?

A No. But I tore a lot of it off.

Q And would that be when you're doing preventive maintenance on that line?

A Yes.

Q And then when you finished doing preventive maintenance on that line, the insulators would come behind you and reinsulate it?

A Yes, most of the time. If you had to tear -- most of the time, then they insulated. And they insulate it all the way up to the flange. And that would cover your bolts and nuts.

Then you would have to chisel that stuff off and brush it off to even get a wrench on the nuts itself to

loosen the flange. Like if you was replacing the gasket, you would have to tear it back so far to get your wrench and all in there.

So they would come back and probably sort of repair what damage you did to the old insulation.

Q All right, sir. Do you have any idea whether any of the insulation that was used out there at Hoechst Celanese was asbestos-containing?

A I can tell you all of your -- everything, except the chill water, was asbestos.

Q All right, sir. When you left Hoechst Celanese in '78, you went back to Precision Bearing?

A Yes.

Q And when you went back to Precision Bearing in '78, you went back to being a machinist, correct?

A Right.

Q What caused you to leave?

A I just got tired of the heat and dust. See, over there at Hoechst, you had grated floor, uniform flooring. It gets up to 115, 120 degrees. And you're working up there in that heat and dust and junk coming up, and you're sitting there burning up. I just got tired of that and went back to Precision Bearing and finished out my work career there.

Q And you worked at Precision Bearing, again, from --

the second, from '78 to 2008?
A Until I retired. And I was working there until I come down -- I was working there part-time when I come down with this.
Q Okay. During your second time at Precision Bearing from '78 to 2008, do you know of any asbestos exposure you would have had?
A No. We had nothing there that was asbestos, not anything.
Q This was just metal shavings?
A Just metal shavings. We had a lot of CNC machinery, and we produced chips.
Q All right, sir. Now, is it your impression that the only place that you had any asbestos exposure during your career would have been at Hoechst Celanese?
A Yes, sir.
Q Okay. And during the entire time that you were out at Hoechst Celanese, did you take your -- not take -- did you get your paycheck from Daniel or Hoechst Celanese?
A From Daniel.
Q So, as a Daniel employee, could Hoechst Celanese tell people -- could Hoechst Celanese people tell you what to do?
A They probably could, but I was employed with Daniel.
Q All right, sir. Did you have safety meetings?

A Yes.
Q And they -- and were they with Daniel people or Hoechst Celanese people?
A Daniel people.
Q And so how often did you all have these safety meetings?
A About every two, three weeks.
Q Two, three weeks. And were they just first thing in the morning kind of?
A Yes.
Q What kinds of things would be covered?
A Mostly hard hats and glasses.
Q Steel-toed shoes?
A That was, basically, it, and cleaning up your area when you got done working, stuff like that.
Q Did you have safety meetings or safety instruction that would have talked about lock-out/tag-out for your lines?
A Yes. We had that, yeah.
Q And this was to make sure that you never opened a line that had live product running through it?
A Right.
Q And -- all right. So when you arrived at the worksite out there at Hoechst Celanese, was there a special place that the Daniel folks went to check in, or

did you just go in with the rest of them?
A We had a time clock in a specific area that we reported to, and got our job duties for that day. We had a time clock there that we punched in.
Q So you would go in, you'd punch in, and who would give you your job duties?
A Most of the time, the Hoechst supervisor would give it to either the lead man or give it to us direct, where to go work for the day.
Q So, at this point, there was, actually, a Hoechst Celanese management guy who was identifying what needed to be done that day; correct?
A Yes, sir.
Q Was there anyone -- was there anywhere in this plant that required people to wear respirators or masks to protect them from fumes or dust?
A Not that I know of.
Q Did you ever see respirators or masks available?
A No.
Q Did you ever see insulators ever wearing masks?
A I seen a whole lot of insulating going on, but I never did see anybody really wearing a mask.
Q While you were out there, your time at Hoechst Celanese was right during the period when OSHA came in and they started having OSHA requirements for job sites. Do

you remember OSHA being a part of your latter years at Hoechst Celanese?

A No. I don't recall OSHA. I don't recall OSHA ever meeting with us in any form or fashion.

Q Okay. That's fine.

A They might have come through the plant while I was working there in my latter years, but -- just looking, you know. But other than that, no.

Q Did you ever hear of any OSHA violations out there?

A Not that I know of.

Q In any of your safety meetings, did Daniel ever tell you about OSHA requirements that were new?

A Not that I know of.

Q At any time when you were working out there, did anybody -- whether it's an outside person, or whether it's a Hoechst Celanese, or whether it's Daniel, did anybody talk to you about the dangers of asbestos?

A No.

Q It never came up in a safety meeting?

A Never.

Q And in the late '70s, '74 to '78, let's say, you know, the last part of your time out there, do you remember any changes in the way the insulators did their job?

A Not really. I didn't -- I don't recall of any

changes myself.
Q Okay.
A I seen them -- like I say, I seen them out in the workshop insulating. And I never seen no respirators or nothing on them.
Q Do you remember the insulators using pipe covering that looked like -- we call them half-rounds or half-moon shapes, that's two halves split down the middle, and it fits around the pipe?
A Not very often.
Q Not very often?
A Maybe once or twice.
Q Okay. Do you remember seeing them use insulating mud or cement that mixed up in a bucket, or a pail, or a flap and trowelled on?
A Yes. I seen them do that.
Q Do you remember ever seeing them use like a cloth to wrap around a pipe?
A Yes.
Q Do you happen to know if it was an asbestos cloth? Did people call it a cloth, or anything?
A I'm not sure. But I'm almost one hundred percent sure it was asbestos. At least, that's what the insulators called it.
Q That's what they called it, asbestos cloth.

All right, sir. Do you remember any other kinds of insulation product besides the half-rounds, the cement mud, and the cloth?

A Not really.

Q That's fine. When you said that you had to tear off insulation when you were working on preventive maintenance for a pipeline, you said that you had to tear it off where the insulators had come all the way back up to the flange, where you had to break the line, and that insulation would cover the bolts and you had -- that you had to get to; right?

A Yes.

Q So you chop it back a few inches so you could get your wrench in?

A Yes.

Q The stuff you were taking off, was that cement or mud-type?

A Some of it was and some of it -- up to the point -- it was sort of like it had cloth on it, you know. And then I'd have to take a hacksaw and, actually, go around it and tear it off, and then brush the threads and the bolt heads off where you could get a wrench on it.

Q Understood. So it'd be a -- some of the cloth and some of the mud product?

A Yes, sir.

Q And during your career out there, you never took any precautions, never used a rag or a mask to prevent breathing this insulation dust?
A No.
Q You said the insulators had their own shop. Did they cut and fabricate insulation materials in that shop?
A A lot.
Q Did you ever go over there?
A I've been in there several times, yes.
Q Were they running band saws?
A They had band saws in there and had different equipment.
Q Band saws, hand saws, all kind of saws to cut and fabricate material?
A Yes.
Q According to one of the work history sheets that we received from your attorneys, there are two kinds of insulation -- pipe insulation that are listed. Do you remember the name John -- Johns Manville?
A I remember the name, but I don't recall exactly where at.
Q Okay. Now, we talked about being exposed to the insulation that the insulators would put on right up to the flange, if you're coming up to a valve; right?
A Yes.

Q Was there any insulation on the valve itself?
A There'd probably be -- sometimes, there would be on the flange portion.
Q But not on the valve?
A Not on the valve itself, no.
Q Okay. Do you remember any pieces of equipment or places in the plant that had spray-on insulation? Do you know what I'm talking about?
A Yes, yes.
Q Was there any spray-on insulation?
A It was in the basement. It was in the basement portion of the spinning department.
Q Okay. Did you ever see anybody applying spray-on insulation?
A No.
Q Did you ever have to tear it out, or remove it?
A I didn't, but they removed some.
Q And was that when you were around to see it?
A No. I wasn't around it, but they tore out some.
Q And you don't happen to know the brands or the manufacturer of that spray-on insulation, do you?
A No.
Q All right. Now, going back to your work when you had to tear off the insulation, the mud or the cloth that had been put on the pipes by the insulators, would that be a

dusty process?

A Would that be dusty?

Q Wait. That's me again.

Would that be dusty? Would it be dusty when you were tearing that stuff off?

A Yes.

Q And you were working on the shutdowns in those plants where you didn't ordinarily work. Can you tell me a little bit about those shutdowns? I think you said, basically, you were in the DMT plant on shutdowns?

A Right.

Q And maybe in the poly building a couple of times on shutdowns?

A Yes.

Q What kind of work would you do in the DMT plant on shutdowns?

A Just whatever they scheduled you to do on that shift. You like to be in some of those tanks chiseling material off the walls of the tank, or you like to be rebuilding pumps, gearboxes, or just anything they got you scheduled to do while you're there that day or night.

They work around the shift. When they had a shutdown, they work 24 hours a day until they got it completed. And most of the time, they wanted it completed in a week. So just whatever they scheduled you to do.

Q So it sounds as though when you were working at the DMT plant on shutdowns, you might go slightly off craft. You might do some things that you wouldn't ordinarily do?
A Yes.
Q And you talked about chiseling, I guess hardened material out of a tank?
A Yes.
Q What was that material?
A It wasn't -- it was -- it wasn't really material. It was ingredients that they used. And some of it got melted to the walls, the vessels. And when they had shutdowns, they would pull the baffles, especially the baffles in the tanks that would catch ingredients, impurities. And you would have to clean all that off.
Q So you would chisel or brush all the stuff off?
A Right.
Q And clean up the tank, clean up the baffles so everything would flow smoothly again?
A Right.
Q And while you were there, you said you might be assigned to work on some pumps?
A Right.
Q I don't know that we really talked about pumps really on your regular job. How often would you work on pumps outside of shutdown?

A Probably maybe once a week or two weeks. It's hard to tell. You know, you work on -- naturally, you do preventive maintenance. But if something goes wrong, you have to work on it right there and then, you know.

So it's according to how the line is running and how often you're pulling the PM on that particular line.

Q So you would -- on your regular job outside of the shutdowns when you're at Hoechst Celanese, you think you might have done pump work every week or two, if you averaged it out?

A Yes.

Q And how about working on like gearboxes?

A I worked on gearboxes probably that often, also.

Q Gearboxes, again, every week or two. How often would you work on like sprockets and rollers?

A Just whenever you're out on the line and you're doing maintenance work on the line, whatever is tore up, you fix. You're like to draw a gearbox this week or a pump today, and somebody else is fixing the sprocket, or the bearings, or whatever. You know, it all works itself out.

Q All right, sir. During this period, how often would you work on valves?

A Pretty often. Probably -- probably one or two a day.

Q So do you remember the name brands or the manufacturer's name of any of the valves that you worked

on out there?
A We had Crane valves. We had Crosbys. We have Henry Vogt. We had Powells, Westinghouses. We had just about every -- just to tell you the truth, we had just about every named valve there were. That was a pretty big operation.
Q Sure. Anyone -- any valve more than any other?
A Probably -- probably Crane valves. We worked on Crane valves probably more.
Q I was trying to get an estimate, if you could, for the amount of time that you would have spent working on a Crane valve versus some other brand of valve.
A The reason I said we probably -- I worked on Crane valves more is because we had a lot of Crane valves in the steam lines.
Q Okay. And, again, when we're talking about work on these valves, sometimes, it literally would have been just tightening the packing gland nut, right?
A Yes, sir.
Q And other times, it's taking the whole thing out and sending it off to be refurnished or scrapped?
A Yes.
Q Now, when you worked on these valves in these different kinds of lines, did you have some valves that were threaded -- screw-threaded in?

A Yes.
Q And you had some valves that were welded in?
A Just a few that was welded.
Q Particularly, like on the DOWTHERM lines, I would think?
A Not all of them.
Q Not all of them. But some of the DOWTHERM --
A Yes, sir.
Q -- would be welded in?
You say you had some screwed, some welded?
A Most of them was flanged.
Q But for ease of removal, most of them would be flanged; right?
A Right.
Q The flanged valves, did you ever see a flange valve come new to the factory? Never brand-spanking new?
A Did I what?
Q Did you ever see a flange valve, as opposed to one of the screwed or welded ones coming brand-new from the factory?
A Yes.
Q And did they come in on pallets?
A The ones I used come from the supply room. It was on stock.
Q Okay.

A You just go down there and --
Q They were new, but they weren't literally coming from the factory. They had already been unloaded and stocked in the stockroom?
A Right.
Q So when the stockroom worker brings you the valve, it's already got packing in it?
A Yes.
Q But it doesn't have flange gaskets -- or does it? Does it have any?
A Sometimes, it would. Most of the time you had to make your own flange gaskets.
Q Okay. Industrial facilities like Hoechst Celanese, do you recall there being different kinds of gasket material for different applications?
A Yes.
Q Do you remember any red rubber gaskets that had cotton dust in the middle of them?
A No.
Q Do you remember any black -- kind of almost like a rubber material, but let's say black flexible gasket material? If you don't, that's fine.
A No.
Q Do you remember Teflon gaskets?
A Yes.

Q Do you remember cork gaskets?
A Yes.
Q Do you remember metal gaskets, either the corrugated kind --
A Yeah. I remember some of them are silver, made out of the silver.
Q Like silver?
A Yes.
Q Okay. So you got the silver kind of corrugated?
A Corrugated -- surrogated, service.
Q Do you, also, remember the kind of -- what's called a spiral-wound, metallic gasket?
A Yes.
Q And do you remember copper gaskets?
A Yes.
Q Do you know whether some of the sheet gasket material had any asbestos in it?
A Yes. I believe all of it did.
Q You think all of it did?
A Yes.
Q And depending on what the valve, or the pump, or the piece of equipment was in service for, you might use one of those different kinds of gaskets that I mentioned; right?
A Right. Most of the time, it was a sheet gasket.

Q Most of the time, it was a sheet gasket?
A Right.
Q Did they have some precut gaskets?
A Yes.
Q And so, sometimes, you would just get one that had already been fabricated, either by somebody else --
A Yes, yes.
Q -- or by the factory?
A A lot of times, you go down there and you order a kit to repair a valve. You get your packing and all in the kit.
Q And --
A In other words, we had this valve. You would have a repair kit for this particular valve. It would have everything in it to repair that valve. But most of the time, it wouldn't have your flange gasket. You would have to cut your flange gasket.
Q Sure. Okay. Was this -- was that repair kit something that Hoechst Celanese put together?
A They bought it like that.
Q So it was prepackaged?
A Yes.
Q It's not something they took from one of these and put it in a baggie for you?
A No.

Q It was prepackaged. Okay. Do you know who sold those repair kits?
A I think it was the manufacturer of each.
Q Of each individual --
A Yes.
Q Did you ever repair a valve, or a pump, or a piece of equipment of any kind where you'd not get a prepackaged repair kit?
A Yes.
Q So, sometimes, you would just get the raw material from the storeroom?
A Right.
Q So you would get your own packing?
A Right.
Q And you would get your own flange nuts or bolts?
A Right. You cut your packing out.
Q And get your own --
A Feed it in there.
Q Get your own flange gaskets?
A Right.
Q So, sometimes, there would not be repair kits?
A Right.
Q Do you remember whether repair kits came for a particular brand or style of valve, and not others?
A Not really. Most of the time, if they had a repair

kit, that's what you would use for that particular valve. If you were working on, let's say, a Crane valve, a 4-inch, or a 2-inch, or 6-inch, or whatever and you had your part number of the valve itself, you go down there and you get a repair kit from the valve -- for that valve from that part number.

If they didn't have that, then you naturally have to make your own.

Q The new packing is lubricated and kind of greasy-feeling?

A Yes, sir.

Q And when you're chafing out old packing, the reason that you have to change the packing, eventually, is that no matter how many times new rings of packing are put in and no matter how tight you tighten down that packing gland, it's -- it gets leaking; right?

A Right.

Q So at this point, we're pulling out soggy, old packing that is no longer sealing the shaft?

A Not always. Not always. A lot of times, it's done got brittle and dried out, then you've got to scrape and pick it out.

Q Okay. So sometimes it's not soggy?

A Right.

Q If it's dried out but it was leaking before, someone

must have shut down that line and let it dry; right?
A Right.
Q Sure. You know, we talked briefly about the rope packing and the square packing. Do you know whether some or all the packing had any asbestos in it?
A I believe all of it did.
Q Okay. Did you ever see any Teflon-coated packing?
A No.
Q It was all braided, or woven, or square?
A Square. Some of it was round.
Q Okay. And impregnated with like lubricants, or graphite, or something slick?
A Yes.
Q What did you use to pull the old packing out with?
A We had needlepoint, sort of like something you pick your teeth with. You reach in there.
Q Little probes that had a little hook on the end?
A Yes.
Q Like a packing hook?
A Yes.
Q Did you ever use those kind that we have -- the little corkscrew?
A Yes.
Q Those, too?
A Yes.

Q You talked a little bit about the gaskets and packing in terms -- being in terms of the types, and all that. Do you remember the brand name or the manufacturer's name of any of the gaskets or packing they used out there?
A We used Armstrong. We used Garlock. Out of the square and roping type was Garlock. We used Garlock. We used Flexitallic, and several other different kinds. I can't think of it right now.
Q That's fine. But you remember Armstrong -- you remember the Armstrong, the Garlock, and the Flexitallic?
A Yes. And John Crane.
Q And John Crane. All right, sir. Did you remember any Johns Manville gaskets or packing?
A Huh-uh.
Q And how many people would be in a crew that were assigned to work on a particular, you know, line for a synthetic fiber?
A Probably -- if it was a PM line, probably, just estimating, 50 people or more, if we were pulling preventive maintenance on that particular line.
Q So 50 people would be working on that line from where you got barrels of flakes, plastic, to where you got bales of finish thread?
A Right. That would include -- again, that would include your fab shop workers. The fab shop work needed

to be done on the line while it's down. A lot of it required your insulators. There -- like to be some insulation that needed to be done, and then requires your millwright doing the preventive maintenance work.

So roughly, on the PM, you'd easily have 50 people on the line working at one time.

Q And during the time that you were out there at Hoechst Celanese, was it a daily occurrence for you to be around the dust from pipe insulation and other insulation the insulators would use?

A Yes.

Q Okay. Let me go back to something I mentioned a little while ago. We were talking about the different kinds of gaskets and packing. And you said you remembered Armstrong, Garlock, Flexitallic, and John Crane; correct?

A I think so.

Q The Flexitallic, is that the spiral-wound metal gasket that we were talking about before?

A No. We used Flexitallic in sheet form.

Q You had sheets?

A Sheet form.

Q Okay.

A Plus, you had your Garlock in sheet form. Plus, you had your Garlock in square, and the rope form, and your Armstrong and all. We used a lot of it in that sheet

form.
Q Okay. Do you remember the name brands or manufacturers names of any of the nonasbestos gaskets like the Teflon or the metal, silver-covered ones?
A No. We had several vessels that required the silver -- the steel, silver-tone coated gaskets.
Q Right. Understood. Now, when you left the Hoechst Celanese facility and went back to Precision Bearing in 1978, had you ever seen anybody at Hoechst Celanese taking air samples? You know, maybe wearing a little bubbler on their shoulder, or on their collar, or on their belt that would suck in air.
A Huh-uh.
Q Did you ever see anybody walling off, hanging plastic, keeping people separate to when they were removing it or replacing the insulation?
A Well, I have seen plastic put in the area and people working in there. But I never asked or knew what they were doing. I didn't go around the area, so I didn't know.
Q Sure.
A It might have not been in my department. It might have been next door, or whatever.
Q Was that -- all right. When did you see them hanging the plastic sheeting and walling off the area? Do you

remember the time, generally what time frame that is?
A No. It was probably -- if I wanted to place a time, it was -- it probably was -- probably in the late '70s before I left there.
Q Okay. And again, just to confirm, you said you don't know what they were doing back in there?
A Well, they did tear out some of that. The area I'm talking about is in the basement. They tore out some of that spray-on insulation, as you were speaking of earlier.
Q Oh, okay.
A And they had plastic up with safety rope around it.
Q So you had to stay away?
A Yeah.
Q The guys that were in there doing the work inside the sheeting and tearing off the spray-on insulation, did they have any kind of protection masks, or suits, or anything?
A I believe they did.
Q Okay.
A They wouldn't -- I don't even think they were our workers that was in there. I'm not sure.
Q Somebody else? Some other contractor?
A Yeah.
Q When we were talking about pumps a little while ago, I think I got sidetracked. Are there any other kinds of equipment? We had mentioned valves. We mentioned

gearboxes -- gearbox of all kinds. We mentioned sprockets, and shafts, and those rollers that you moved the product.

Can you recall any other kinds of equipment that if you were writing your job description, you would tell your replacement, you better know how to repair this?

A Say that one more time.

Q In other words, we talked about all this different kinds of equipment that you had to repair and that you had to know about it. Well, if you had to write a job description, say, to your replacement, son, you better know how to repair this, is there any other type of equipment you would put on that list?

A Well, we did a lot of repair work on the set techs up on the stretch line. That is these huge gearboxes with large rolls on it where your fiber comes out, goes through. One of them has chill water running through it. And it rolls itself out there. It's real cold. It freezes the product. And then it goes over steamrollers which stretches the product. And then it goes into the crimpers.

Q Other than the time you hurt your back being a strongman pulling the hundred-pound sprocket wheel off --

A Yeah.

Q -- did you ever get any other injury out there?

A Huh-uh.
Q Well, you were lucky, it sounds like.
A Yes, sir.
Q So --
A I take that back. I did.
Q Do tell.
A Carrying around it today, this asbestos cancer.
Q Oh, well, with the exception of the asbestos -- and I understand that.

And can you remember any particular repair kit that you would have ever seen for a Crane valve so that you could tell me what it was -- what was in it?
A Yes. Most of the time, we had a repair kit. It consists of your packing, your gaskets under it down there, under your bonnet there.
Q Your bonnet gasket?
A Yeah. And sometimes it would have your bolts in it. And the big gaskets, we would have to make.
Q The flange gaskets?
A If we didn't have a repair kit, we'd have to make everything.
Q Understood. So it would have -- if you've got a Crane repair kit for a Crane valve, it would have precut lengths of packing that were designed to fit around a particular shaft; right?

A Right.
Q The bonnet gaskets that you remember -- do you remember were they -- do you remember whether they were Teflon, or cork, or an asbestos composite, or do you remember?
A They looked like they was -- they wasn't cork or Teflon. They were mostly -- it looked like asbestos-type gaskets.
Q But if there was a Crane valve that had a bonnet gasket, and if you had a repair kit so you were replacing it, would there be any way to tell whether the bonnet gasket that you were pulling out was one that had been just fabricated from Hoechst Celanese's stock, or whether it came from Crane Company?
A It would have come from Crane Co. Because the kit itself, Hoechst didn't put nothing in it.
Q Right.
A It was a kit, Crane Co.
Q So the new one would be from Crane Company?
A Right.
Q What I'm asking is, the old bonnet gasket that you pull out and you replace with one from the kit, would you know whether that one that you were replacing had come from Crane Company, or whether someone else had fabricated it from just regular stock?

A They didn't fabricate any kind of gaskets like that and put in the supply room. We made -- we made gaskets out in the field if we had to, you know, or we would designate somebody to make gaskets a day. And they would make gaskets about all day, different sizes for your three, four, five, six-inch flange valves. And we would make a supply of them.

Q Sure.

A And other than that -- that was for emergency purposes. Other than that, we used Crane Co. packages from the supply room.

Q Understood. Is there a chance that -- the bonnet gasket on a Crane Company valve that you pulled out, is there a chance that some other Daniel employee had made that, cut that himself?

A No.

Q Okay. When you removed gaskets, were there occasions when you open up the two halves of the -- you crack open the flange, were there occasions when the gasket would just come out loose?

A Occasionally, yes.

Q And were there other times that you would have to like use a putty knife, or something, and pop it and pry it out?

A Sometimes.

Q Did you ever have to use any other kind of tool besides like a putty knife?
A Well, on your flange portion, you know, you had that surrogated surface on that lip.
Q Yes, sir.
A And you would have to -- sometimes on a steam line or a DOWTHERM line, that stuff is -- it's literally got baked in there.
Q Sure.
A I've even put brushes in drill motors and sit there and try to get it out. And I have literally took a pick and tried to go around the surrogated surface on the flange itself getting it out. It was just like it was welded in there sometimes, you know. It was hard to get out.
Q Do you remember any brand name or manufacturer's name of a valve where you know they used an electric motor with a brush on it?
A Probably Crane Co., and just about all the valves in there at one time or another.
Q So if you went to the supply shop to get a valve repair kit, how did you know that the contents of the valve repair kit were supplied by the valve manufacturers? How do you know that?
A That's -- we didn't. Hoechst didn't make any kind of

repair kits over there. And we didn't -- Daniel didn't. And everything in the supply room is set up from the factory by the factory. All the gears, all the shafts, everything pertaining to a certain item came from the factory, even down to the repair kits.

Q Did you ever see any kind of purchase order or other piece of paper associated with a valve repair kit that had a manufacturer's name on it?

A We had paperwork in there. And I believe it had the manufacturer's name on the paperwork in the valve kit itself. But as far as the purchase order, I don't recall.

Q Okay. Are you saying a piece of paper came with a manufacturer's name on it, came with the valve, or was in the valve repair kit?

A It was in the kit.

Q And that would be on that piece of -- and what would be on that piece of paper? What would it say?

A I think it was an instruction, more or less an instruction piece of paper showing a diagram of what you had in there versus with the valve, if I ain't mistaken. Again, we're referring back to 40 years ago. And a lot of water has been under the dam since then.

Q What I want to know is, you mentioned John Crane. What product do you remember that you -- that was for? Gaskets or packing?

A Gaskets.
Q Okay. And that was just gaskets?
A Mostly, yes.
Q Is there any other product you recall John Crane being associated with?
A Not really.
Q Okay. Great. I'm just going to focus on gaskets then.
A Okay.
Q How do you know that John Crane gaskets were used at Hoechst Celanese?
A On the sheets, it had John Crane's name on them.
Q What size were those sheets?
A Oh, we had them up probably -- probably around four foot, four foot by three foot.
Q Okay.
A Pretty big sheets.
Q And how thick were those sheets?
A They ranged from thin to up to probably between a sixteenth and an eighth of an inch thick.
Q Great. What color were there -- were they? I'm talking about -- just about the John Crane sheet gaskets.
A Dark.
Q Dark. Like dark gray?
A Dark gray.

Q Okay. Did it have a logo on it, or was it just the name?
A I believe it had a logo, but I can't explain exactly what it looked like.
Q All right. And do you recall John Crane gaskets in any other variety, other than the sheet gaskets?
A That's all.
Q Okay. Were -- all these sheet gaskets were uncut?
A Yes.
Q Did you personally -- do you recall a very specific time -- do you recall a specific time where you personally handled John Crane sheet gaskets?
A Yes.
Q Okay. About how many times was that?
A We would -- probably once or twice a week, we would cut gaskets out of it.
Q Who is "we"?
A Me.
Q Okay.
A Or whoever was doing it that specific day. It wasn't necessarily me. It was whoever was assigned to that job on this day.
Q Okay. So once or twice a week, someone that was assigned to a job requiring cutting sheet gasket may handle that particular material?

A Right.
Q What about you -- what about you? How many times did you personally handle John Crane sheet gasket material?
A Probably once or twice a week John Crane itself. But when I handled it, I would cut a good many gaskets.
Q Okay.
A You wouldn't cut just one. You would cut a supply of them.
Q Was that for the entire time -- was that for the entire period between 1969 or 1978, or was that just a certain time while you were working at Hoechst Celanese?
A It was continuously, a continuous thing the whole time I was there. I mean, we had to have the gaskets on all the time on the job.
Q Okay.
A And, like I say, it's whoever was assigned to cut gaskets that day. Or if it was an emergency, you would have to cut one then.
Q Okay. So if you -- I think what you're saying is that either once or twice a week you would be assigned to cut gaskets; is that right? Or do I have your testimony --
A Right.
Q All right. And where would you cut those gaskets?
A We had a room back there. We had a big sheet of

thick plywood. And we had the transit-type razor blade with needlepoint on it. You measure out your diameter, and you cut out the circumference of it. Then you cut it that way or you would have a sample.

Q You would?

A You'd have a sample gasket already cut to order.

Q Okay.

A You lay it down, and trace it, and punch it out, and cut it out.

Q Got it. About how long did it take to cut a gasket, one gasket?

A They can be pretty aggravating sometimes. 30, 40 minutes sometimes. Because they would be aggravating.

Q There was other sheet gasket material that you would cut new gaskets from, other than John Crane; is that right?

A Yes, ma'am.

Q Do you know about how many other brands, or can you just not recall?

A It's Armstrong and your Flexitallic. Different ones we used.

Q Can you recall a particular brand of sheet gasket material they used more than any other kind?

A We probably -- I don't know. I'd say it was probably on an equally basis.

Q And about -- about how long of a time period would you be cutting new gaskets?
A If you was assigned to cut gaskets today, you would probably go four, five, six hours doing them, cutting gaskets.
Q Would it just -- would it be just you that would be assigned, or would it be multiple people assigned?
A It would be one person today. And there would be a different person next week or week after next.
Q Got it.
A Whenever they needed another supply of them cut out.
Q Got it.
A Because we used a lot of them.
Q Do you recall a specific time using John Crane gasket material in any other context than cutting the actual gaskets from the sheets, and in any other way other than the piece of plywood you were cutting them out?
A No.
Q All right. Can you describe to me the process of removing a gasket?
A A used gasket?
Q Yes, sir.
A It's like I said earlier. After -- on the line, most of it was under heated circumstances. And those things -- most of your flanges and your valves had a -- well, one of

them had a surrogated surface on it. And that thing would get matted in there. And I'll tell you, for something to look as easy as a gasket, it would get welded, actually, into the metal itself. And you would have to -- wire-brushing it sometimes would be sufficient to get it out.

Like I said earlier, I've used a drill motor and a brush that way. And I have took a pick and I went in there and, actually, picked it out of that surrogated surface. It would be matted in there so bad, sometimes, it was hard to get it out.

Q Okay. How long did it take you to remove the gasket in usual circumstances?

A In usual circumstances, it didn't take very long.

Q Well, about how many minutes?

A Probably taking the bolts out and taking the gaskets off, most of the time you could take a putty knife or anything and just get behind your gasket and buff it off. And then sometimes you would have all the problems with it. It would be hard to estimate.

Q So if you're just popping it off, 30 seconds?

A Yeah.

Q And, obviously, when there was some circumstances where it was longer than that?

A Yes.

Q Describe to me the process of installing a new gasket.
A Well --
Q Without having to cut it, because we've already talked about cutting it out of sheets. What about if you're, actually -- what about if you're, actually, installing, putting it in?
A Most of the time what I did was, you're putting it in on the line out there. The easiest way I ever done it was to drop two bolts in the bottom half of it, bring your gasket down and center it up, and put your other bolts in, tighten it up is the way I've always done it. And try to draw it up to where your flange is pretty well equal all the way around. You ain't got it draw together here and a gap up here. That it's pretty well equal all the way around.
Q Did installing a new gasket create dust?
A Not installing it, but take it off.
Q About how often would you encounter a gasket that was not able to be popped out?
A About 95, 98 percent of the time. Because under the conditions of the hot heat and all, it was just about all the time.
Q All right. The entire process of removing an old gasket and putting a new one in, how long would that take?

A Again, it's -- you could brush and clean on the flange for an hour or, at least, an hour or longer trying to get the old gasket material off. So it's hard to tell.
Q You testified earlier that you think some of these materials were made of -- some of these gasket materials were asbestos. Do you recall that testimony?
A Uh-huh.
Q How do you know that some of it was asbestos?
A Well, you can -- especially, if it's white, white-colored, you can tell by the grain. You can tell by looking at it. The grain of the gasket material itself is the way I told. I might be wrong, but...
Q Why do you think that?
A Because that's -- why do I think that?
Q Yeah. How do you -- how did you come to think that that meant asbestos?
A Well, you know, that's what everybody always said it was. So that's what I went by.
Q Was there ever a period of time at Hoechst Celanese when you were not assigned to working with gasket materials, such as a long period of time when you were transferred to another side of the plant where you would not have worked with sheet gasket material, or removing, or installing gaskets?
A No. Even when I went to the PIV shop up there and

worked for a while, we were still putting gasket material up there.

Q In your work history sheet, it says there were roles at Hoechst Celanese -- and correct me if I'm wrong -- it's millwright helper, millwright, and maintenance worker?

A Well, millwright and maintenance worker, it's the same thing.

Q Okay. Were those job duties pretty much the same in that you may have worked with sheet gaskets in both those roles?

A Yes.

Q Was there a time period in either one of those roles that you would have spent less time working with sheet gasket material?

A No.

Q Were you ever in a role at Hoechst Celanese where you would just be observing somebody else working with relation to some sheet gasket material?

A No.

Q Did you see any signs -- I'll say the caution signs or warning signs stating, Don't breathe asbestos dust. Asbestos dust could be harmful?

A No, sir.

Q Did you see the insulators using that --

A Maybe one or twice, not much at all. Maybe once or

twice. And I've seen them use -- take some out of the box and put it on the line on the short, short run.

Q Okay.

A But not on a daily basis.

Q So the insulators -- and correct me if I'm wrong -- for the most part, we're talking 50-pound bags of cement, dumping them into a trough, making the mud, and putting that mud on the steam spines that were -- they were insulating?

A They would put it on it -- like I said earlier, if I stripped the line back this far in order to get the bolts and studs out, they would reinsulate that -- done it that like. Most of the insulation was put on the lines when the line was constructed, when construction was going on.

When they put the lines in, then they insulated the lines. And that was a permanent deal, unless you tore the line out. But on all your vessels -- like you got all kinds of equipment on your deicers, and reactors, and all of that that you had to tear out and rebuild.

In the beginning, back in the early part of the '70s, that insulation was put on there and it was embedded. And when I say "embedded," it was glued to the surface of the pumps, or whatever you wanted to pull off that vessel. And you would have to scrape, and scrape, and scrape to

get to your bolts and nuts and all of that to get your equipment out.

Q That's where you did your work as a millwright?

A Right.

Q And the way they would insulate those lines is, in that regard, they would use this half-round, half-moon stuff to replace it?

A I've only seen them use that maybe once or twice --

Q Okay.

A -- in my eight or nine years. And the rest of the time, they insulated that thing with mud, I guess. Most of the time, insulators done their job. And we weren't in there working when they was working there. And they wouldn't be in our area where we were -- where we was working at. You know what I mean? We wouldn't be in one another's way.

But most of the time insulators, if they was insulating, you'd be working over here somewhere.

Q Okay. You mentioned earlier that the floor was sort of a grated floor that the dust could flow throughout -- all throughout the plant?

A Yes.

Q It's not like you were working in a room like we are right now?

A No.

Q And the insulators were working in the room down on the other side of the hotel, everything was still open, and you had grated floors, and all sorts of heat?
A A good portion of the plant, it had grated floors. From the second floor to the fourth floor, it had grated floors. And then in some spots on the second floor, you had cement floors. Part of it was grated, part of it wasn't.
Q So if I had an insulator on the fourth floor mixing up a trough full of asbestos cement or asbestos mud, when he dumps that 50-pound bag into the trough --
A If I'm working on the fourth floor and he's working on the second floor, I'd get a dose of it. Because the vacuum pull is sort of like you got a fan, an exhaust fan up here running from those floors being open, you know. It just -- everything goes up.
Q And the heat in the facility would keep things sort of circulating around?
A Yes, sir.
Q I noticed in your worksheet that you mentioned boilers. Did Daniel have its own boilermakers, or did you work on boilers?
A No. The boilers was down at the DMT plant. When they had shutdowns, we go down there and we may have to scrape and clean a lot of work on the boilers. But they

did that work on the boilers theirself [sic] then.
Q Who's "they"?
A Daniel that worked in that area.
Q Oh, okay.
A There was experts on the boilers. And we wasn't -- because we didn't work -- we did mostly the cleanup work on them.
Q Were you ever in the area where a boiler was being worked on?
A Yes.
Q Were you ever in the area where a boiler was being reinsulated?
A No, not when it was being insulated. But I have did a lot of scraping. And, like I was talking about, in those vessels with all the gunk in them, we done the same thing around the boilers.
Q Are you talking about being inside the boiler when you're doing that?
A I'm talking about inside the tanks and everything, but the boiler itself, all the piping is running to and fro the boiler. We cleaned it up, cleaned the flanges up on it, and all of that.
Q Okay. Were the steam lines used to -- do those run to equipment in the facility?
MR. PURNELL: What page are we on?

MR. TIVIN: 178.

MR. PURNELL: I believe 178, Line 5 --

MR. TIVIN: Your Honor, could we take a two-minute break?

THE COURT: Sure.

All right. Ladies and gentlemen, don't talk about the case. Continue to keep an open mind.

We'll take a short recess.

(WHEREUPON, the jury was excused from open court at approximately 4:23 p.m.)

(WHEREUPON, a break was taken.)

THE COURT: Yes, ma'am. Bring them on in.

(WHEREUPON, the jury came into open court at approximately 4:36 p.m.)

THE COURT: Yes, ma'am.

THE BAILIFF: Your Honor, I think some of the jurors are saying that they're having a hard time hearing.

MR. TIVIN: That's a first. But, yeah, I'll make sure to speak up. I'm sorry.

THE BAILIFF: Thank you, sir.

MR. TIVIN: And if it happens again, just stop me right then. And then we'll fix it.

(WHEREUPON, the deposition of Mr. Dennis Seay was read into the record by Mr. Mark Tivin asking questions and Mr. Simon Purnell answering.)

EXAMINATION (CONTINUED)

Q When I was reading through your transcript last time, there was a lot of talk about lines. It seems like I guess there were three main lines at Hoechst, DOWTHERM, steam, and chilled water?

A Right.

Q Okay. Were the steam lines used to -- do those run to equipment in the facility?

A Yes. We had steam lines, miles and miles of steam lines with Hoechst Fibers running everywhere in there.

Q The DOWTHERM lines, were those used to heat the facility?

A The DOWTHERM run to -- we had -- like your spin beams is DOWTHERM run from the boilers to the spin beam. The different areas, degassers, reactors, different pieces of equipment that required where the polyment is being melted. And that's what we used to melt the polyment with was the DOWTHERM.

Q Okay. So these lines were used kind of in the operation of the plant?

A Operation of the plant, true.

Q So it sounds like the lines were fairly important to the operation of the business; is that fair?

A Very important. If they didn't operate, they wouldn't run.

Q Okay. Outside of these lines, was there any way to get the steam or DOWTHERM to the machinery and equipment?
A No.
Q So when the lines were down, it was important to repair those lines and get them operational?
A Very important. Because if the line was down, unless you could bypass, if it was coming off your main line -- see, back in the early '70s, we got our steam from the DMT plant, which is down next to 85.
Q Okay.
A That's where -- and that's where we got our steam from. See, it came up through there on the main line.

And then when it got up there to spinning, it spread out. It went to the poly building. It went to the stretch line and spinning. It went all over the plant from that point.

And if you had a valve go out, if you're, say, on the stretch line, it's very important to get that back running as quick as you could.
Q Okay. So if something went off on the stretch line, it would shut down the stretch line?
A Yeah.
Q And if something went down on the spinning line, it would shut down the spinning line?
A As far as I know.

Q Okay.
A I mean, as far as my recollection.
Q So you would -- so would you agree that these lines were important to the operation of Hoechst Celanese?
A Very important.
Q If a line went down and there was failure, was it important for you to perform the repair quickly?
A Yes.
Q And that would be the case no matter where the repair was made in the facility; right?
A Yes.
Q You, also, mentioned repairing some equipment last time during your deposition. When you made a repair, was it because there was something wrong with the equipment?
A Right.
Q So, in other words, you had two types of repairs or work that -- that I understood from your deposition -- sorry. I'm asking an inartful question here.

You talked about preventive maintenance and repairs generally. Is that the two types of work you did at Hoechst Celanese?
A Right, preventive maintenance. And a lot of times we had shutdowns, you know, in which we have preventive maintenance, too.
Q Okay.

A And then emergency was the type.
Q Okay. And the preventive maintenance was -- it's my understanding that it was scheduled at certain times during the year?
A Right.
Q Would it be twice a year that you did preventive maintenance?
A Most of the time, maybe once or twice on the average. Probably once a year that we had what you might say a shutdown on the line. And that's pretty well go through the whole line from the operation, say, from spinning all the way across the stretch line and catch repairs, and replace parts that we know in advance needs to be done.
Q Okay. So you were looking for any equipment that may be broken and, also, anticipating --
A Anticipating it to be broken.
Q Okay. So preventive maintenance was performed even at times when there was no issue with the equipment?
A Right.
Q And was the purpose of that to identify issues before they occur?
A The purpose of preventive maintenance is to prevent the line going down in the future and costing you production. When you're scheduled to go down, your catchall is preventive maintenance then. And that way, in

the long run, next month this particular vessel that is about to tear up, you done fixed it. So you won't have a shutdown or loss of production on account of that is the purpose of preventive maintenance.

Q Okay. So the preventive maintenance was done to ensure the plant would continue operating?

A Right.

Q Would you say that preventive maintenance is essential to the operation of the plant?

A Very important.

Q And then in terms of the repairs, the repairs were done either -- like some particular type of equipment. I know you talked a lot about the equipment last time. But when one of those pieces of equipment failed, then you would perform a repair; is that fair?

A Yeah.

Q Okay. And when there's -- the repairs were made, basically, to get the machinery or equipment back up and running so the plant could continue operating; right?

A Right.

Q And then you made those repairs, the factory workers could keep doing their jobs; right?

A Correct.

Q It sounds like, I guess, Daniel employees took care of all the maintenance at the plant?

A Yes.
Q So if any equipment broke down in the plant, it would only be a Daniel employee that repaired it?
A As far as I know.
Q Did you ever see anyone else besides Daniel employees making repairs at the plant?
A Not unless they had an outside contractor come in on a specific -- specific piece of machinery, or something. But, mostly, it was Daniel that did the repair work.
Q So, generally, if a piece of equipment went down, there was only you or another Daniel employee that would make those essential repairs?
A Yeah.
Q And the repairs, whether you did them or another Daniel employee, those were done to keep the plant operational?
A Correct.
Q Did Hoechst ever give you instructions about repairing equipment?
A No.
Q Those instructions would come from your supervisors?
A Right.
Q And then would your supervisors get their instructions from Hoechst?
A Right.

Q Would it be the lead man? Is that the person that --
A Right.
Q So Hoechst provided instructions to the lead man?
A Right.
Q And then did you have meetings in the morning where you would get your assignments for the day?
A We would get our assignments every morning.
Q Okay. You testified about some parts from a -- about some parts -- excuse me. You testified about some parts room last time, or a storeroom, I believe?
A A what?
Q A storeroom where parts were kept.
A Yeah, a supply room.
Q I believe you said that there could even be millions of dollars worth of parts in that storeroom?
A Correct.
Q And were the products in the storeroom kept so that you could fix most of the equipment in the plant?
A Sir?
Q Were those parts in the storeroom there so you could have them accessible to fix the parts in the plant?
A Right. Just about every -- as far as I know, just about every piece of equipment in there had the blueprints. And everything was set up to where you had two or three basic parts to rebuild this whole -- if it

was a box, or a pump, or whatever, to rebuild it.

And they always kept so many parts in there for that one particular thing at all times. So there was millions of dollars worth of parts concerning PIVs, and gearboxes, and whatever in there at all times.

Q And then when you had those parts so close by, then you didn't have to order them?

A Right. Plus, the fact -- plus, the fact your line is supplying, say, 70, one line, especially in staple B. One line is supplying like 70 or 80 bales a shift of fiber, 700 and something pounds. And as high as that stuff is a pound, you wouldn't want a $20 item to shut that line down.

So they tried to have everything set up on stock to where anything that tore down, we had a spare part for it where it could be easily fixed.

Q Okay. So then you could get the parts and make the repair quickly and get the line back running?

A Right.

Q Did that help you make your job faster then?

A Yes.

Q And it cut down on downtime at the factory?

A Correct.

Q Would you agree that each piece of equipment in the factory then is essential to the manufacturing operation?

A Correct.
Q Like you said, you don't want a $20 piece of equipment to shut down a million-dollar line; right?
A Right.
Q And it was important to get those parts from the storeroom so you could make your repairs; right?
A Correct.
Q You mentioned some insulation and mud at your last deposition. Do you recall that?
A Yes.
Q Was part of that insulation used to prevent heat loss so you could maintain the temperature?
A Correct.
Q Was insulation, also, used to keep people from getting burned?
A It was mostly -- insulation on all your piping and all was mostly to keep the piping hot. Because you take the DOWTHERM, for instance, it takes a certain degree to melt that polyment. And your DOWTHERM is your heating source to melt it. And it's got to maintain a temperature.

If it don't, it won't do its job. And then your line goes down and you lose all your packs and everything else on that particular one line, which runs into thousands of dollars.

Q Oh, okay.
A So that's what the insulation is for mainly.
Q I didn't mean to cut you off there.
A No. That's okay.
Q So the insulation is important in the manufacturing to keep the temperature hot on those lines?
A Yes, it is.
Q Okay. You talked about insulators. I guess there were insulators on-site at Hoechst?
A Sir?
Q There was an insulation crew on-site?
A Yes, yes, yes.
Q Did they have their own shop?
A In the beginning, if I'm not mistaken, the back of -- the back of staple going towards that supply room I was talking about, on the right, you had the carpenters, if I'm not mistaken. You had the carpenters and the insulators together in the same building there on the right.

Now, later on, I think the insulators got their own shop, if I ain't mistaken. I might be wrong. But if I remember correctly, in the beginning, your insulators and your carpenters was working out of the same building.

Q Okay.
A It wasn't a very big building either.

Q Did you ever work in that building?
A No.
Q Did you ever work as an insulator?
A No.
Q Did you ever install any insulation?
A I tore some off. A lot of times around those degassers and reactors in the beginning -- in the beginning, they would put that mud on there. And then that tremendous heat would more or less cook that stuff on there, you know.

And then we came back and would have to remove the pump or whatever is pulling the fiber out of the vessel. We got to chisel that stuff off. And it got to where it was such a bad process and such -- such a rough process, somebody come up with the idea to make a -- take the pump under there, for instance, and take it out there and make a mold, and then insulate that thing, and split the insulation, and mount the insulation on in sections and then put a band around it.

And then when we come along as maintenance workers, all we would have to do is break the band then and remove it. And we didn't have all that wasted time of tearing all that stuff off. Then we can put the same old mold back on when we got done.

Q So then all you had to do was take off, cut the

bands, and just set it to the side?
A That was only on -- where certain vessels. You had so much piping running everywhere that it was so hard to get what you was working on out without being very destructive. That was really the only part that was modified to where the insulation was easier to take off, you know.
Q Okay.
A Because most of the time when a line shut down on PM, it would be shut down so many hours. And they'd pretty well set a deadline, and they want the deadline held. And tearing the insulation all off was slowing the process down a whole lot.
So I don't know who come up with that idea, but it was a very good one.
Q After you cut the insulation off, would you install it -- reinstall it when you were done with your work, or would insulators come back?
A At first, we would install it. But, finally, the insulators would come back and put it back on. We took it off. And they'd come back and put it on.
Q There was some talk about half-rounds last time. Did you ever install half-rounds as part of your job?
A No.
Q And the mud material, did you ever mix and install

that?
A No.
Q Do you know who -- the manufacturer of any of the insulation in the plant?
A Not really. I never did ask, to tell you the truth. I never did ask or -- you know.
Q Okay. Did you ever have any training on asbestos identification?
A No.
Q Did you ever see any writings or markings on the material indicating that it contained asbestos?
A No.
Q Are you generally aware that there were asbestos and nonasbestos insulation materials?
A No.
Q Okay.
A Believe me -- believe you me, out of all of them times crawling up on them ladders and way up yonder using a drill motor with a brush in it, and you're standing there looking at it trying to get -- trying to get gasket material and all off of flanges, if I had known that stuff would have done what it's done to me, there ain't no way I would have been up there.
Q Did you ever see any packaging for the insulation material?

A Any what?
Q Any packaging?
A No.
Q Cardboard, or anything?
A No.
Q Are you aware or did you see any warnings on the insulation?
A Any what?
Q Any warnings?
A No. I wasn't involved with installing insulation, or anything like that.
Q Oh, okay. You talked about removing some insulation. When you removed it, would you just generally remove the part that was covering whatever you needed to work on?
A Correct.
Q So you were trying to remove just a small -- just as small amount as possible?
A Right.
Q And did you generally try to perform your work as quickly as possible?
A That's right.
Q The cement-type material, how would you remove it?
A Well, most of the time, you would more or less -- like when they come in there and insulate and they insulated on the valve or insulate around it on the

flanges and all, it gets on the bolts and all. You just more or less have to chisel and brush, chisel and brush to get it off. And then strip it back so far to where you can get your bolts and get them out, you know.

Q And --

A And that was the process that we did.

Q When you knocked it off with a chisel, would some of it come off in chunks?

A Yeah, right.

Q Did they have laborers that would come and clean up the areas?

A No. We, basically, cleaned up our own area. When we got done, we'd sweep up and just put it in the trash can, or whatever.

Q So would that -- so was that true for insulators, too, that they would be responsible, too, to clean up their own areas?

A Yes.

Q Okay. The insulation that you removed, would you ever know who installed that insulation?

A No.

Q Would you know when it was installed?

A No.

Q Would you know who manufactured it?

A No.

Q My understanding is that generally on a day-to-day basis, you did not generally work around insulators; is that right?
A Right.
Q And so most of the time when the insulators were working, they'd be in a different area of the plant. You all would try to avoid each other?
A Not necessarily. I mean, you know, if they were insulating this vessel here and if we got a job going on the same floor, we would be working side by side, you know. Because you only had so many hours to complete the job, you know.

It's very important to get the line back up running. And so you were -- you're liable to have three or four crews in there in one area working. You're liable to have five shop workers running maybe a new vent line, or something. There would be welding going on. And everybody is in there working together.
Q Even if you were on the same floor, would there be times that you would be, say, 10 feet away from the insulators?
A Yes.
Q And there may be sometimes even further than that?
A Yes.
Q Would the insulators do most of their work during

preventive maintenance?
A Well, I don't know. The insulators, you know, they did their own thing. And they were -- they would show up in the morning. They were like us. They'd be appointed to do certain things. And they're liable to be working in your area today and be working somewhere else tomorrow. So I don't know.
Q On a day-to-day basis, would they primarily be doing repair work at times when it wasn't --
A They would be insulating somewhere all the time.
Q Oh, okay. You just saw them every now and then?
A Right. When they was in my area of working, I knew they were there, you know. We'd talk together and eat lunch together, and things like that.
Q Okay. When you were performing your work, did you generally not want dust to get on the equipment?
A We would have to wipe the equipment down when we got done. If we were working on any piece of equipment, they didn't want a fingerprint left on it. They wanted it wiped down.
Q Did you ever -- when there were insulators in your area and -- would you just take the equipment somewhere else so you could work on it and be away from their dust?
A No.
Q When they were in your area installing insulation, do

you know what type of insulation they were installing?
A No.
Q And you don't know who manufactured any of that insulation they installed?
A No.
Q The cement material, did you ever mix any of that material yourself?
A No.
Q Once it was mixed, was it kind of wet, pasty-type material?
A When it first was put on the piping, it was like wet paper, or something.
Q Did you ever see any dust after the material was wet?
A I don't recall.
Q Did you ever see any packaging for that cement material?
A Did I ever what?
Q See any packaging for any of that cement material?
A No.
Q Do you know how it came? Like did it come in bags or boxes, anything generally?
A No. I never did watch them, how they mixed it up, or anything like that.
Q So you never saw them like dump it into a bucket?
A No.

Q So when you saw it, it was already just a wet, paper-mache-like material, like you said?
A Yes.
Q Did you ever go in that area when they were removing that material?
A Well, no. I didn't go in there when they were removing it, because they had it blocked off.
Q Oh, okay. Did that keep the dust from coming out while they were removing the material?
A Well, not necessarily. It probably kept some, but it didn't keep all of it.
Q And that dust, you wouldn't know where that came from, would you?
A The dust would probably be coming from -- as it was tearing the insulation off. I didn't watch them. I didn't watch them tear the insulation off. I just seen the curtains up, and everything. And I asked somebody what was happening. And they said they was taking the insulation off.
Q So you were just there for a few minutes then?
A Yeah.
Q You mentioned using some preformed gaskets the last time. Do you recall that?
A Yeah.
Q They were premade to fit on the lines?

A Yes.
Q Did those gaskets make your job faster?
A Yes.
Q And were the preformed gaskets made to fit just on lines, or were they made to fit on equipment as well?
A Oh, it was made to fit on the -- we made our own gaskets, as far as flange -- on your flanges, on your valves, and on all your steam lines. They were all your lines.

We would make our -- a guy would be appointed. And he would make gaskets, say, all day today. And everybody kept them rolling, different gaskets on their toolboxes. And you went through the shop, you know, you always had a gasket that one blew up there, and you had one right there handy, repair it with.

Q Okay. So you could just pull it off of there and stick it on the line?
A Right.
Q And when you installed those gaskets, would you just lay them on the line and fold it back up?
A Sir?
Q When you installed a preformed gasket, would you just put it on the flange and bolt the flange back up?
A No. You would have -- all your flanges had -- all your flanges had a surrogated surface on it. And if it

was a steam line, the stuff would melt in that surrogated surface. And it would be like steel with steel. And you'd chisel, brush, and even take a pick and scrape to get that stuff out of that surrogated surface before you put the new gasket on. Because if you didn't do that, you wouldn't be getting a good seal, you know, when you tighten your flanges back up.

Q Okay. And once you had that --

A So it was a job to -- if you were working on them -- if you was changing gaskets on a steam line and the gaskets had been on there for a while, it was a job just to get it clean to put another gasket on it.

Q And once you had that old gasket removed and you had the new gasket premade for you, at that point, could you just lay it on the line and bolt it back up?

A Most of the time. Most of the time, I would just drop two bolts in the bottom three holes and the gasket was already prefit -- precut to fit everything, and drop it down through there, and align everything up, and sort of snug the bolts up, and draw it up to where it would be even, proceed to sort of torque them in around to where you would have no leaks.

Q And when you dropped that gasket in, would that just take a few seconds? Right?

A Yeah.

Q And you didn't have to cut or manipulate the gasket at all?
A No.
Q And there was no dust when you installed that preformed gasket, was there?
A No. But there was a whole lot of dust when you was making the old -- taking the old one off.
Q And those old gaskets, you don't know who manufactured them, do you?
A Well, most of them, we made them ourselves there at the shop. We had two or three different gasket materials there. I done forgot the name of them now.

We had -- I think it was three different kinds of gasket material. Some of it was light. Some of it was dark. Armstrong, for one. And I don't know. John Crane, I believe, might have been another.

But, anyway, we cut our own gaskets out. We would get gasket material in there -- say, like four-by-eight sheets -- partially four-by-eight sheets. And we'd appoint -- maybe me today, I'd cut gaskets.

We had hard plywood or hardboard to go down. We'd set that down on, and we'd stamp them out, you know. And we had them for different sizes. And we made our own gaskets as far as that goes.

Q And you mentioned a few different manufacturers of

sheet material. And I was sort of interested in knowing if there were times, maybe a month at a time, where you would have one manufacturer of sheet material, and then maybe the next month, you'd have another manufacturer of sheet material?

A Just whatever our supervisor would order.

Q Okay.

A I guess whatever he could get his hands on at that particular time.

Q Okay.

A But we went through several amount of manufacturers over a period of years.

Q I got you. When you had a number of sheets, I guess to cut gaskets, would you get, for example, Armstrong sheet goods to cut all your gaskets, if that's what you were provided from the supply store?

A I don't recall where we were strictly. If I was cutting gaskets out and I had the piece of Armstrong material, or John Crane material, or whatever up there, I was cutting my gaskets out of it.

Q And my only point was, when I'm trying to understand, if you, for example, needed three sheets, would you get three of the same manufacturer, or would it be a mix-and-match? Or do you know?

A It could be a mix.

Q Do you have an estimate of a percentage of time it would be insulated -- excuse me -- a flange would be insulated?

A Probably about 25, 30 percent of the time, it would have insulation on it that you'd have to beat off.

Q And what -- what did you beat it off with?

A Most of the time with a -- if you can get it off with a screwdriver, you'd get it off that way. And then use a scrape like a putty knife, and scrape it off.

Then if you have to, you'd use a brush. If it was even tougher than that, you'd put a brush in a drill motor and use that.

Q Got you. The last question is, when you were cleaning the flange for a stuck-on gasket, what equipment would you use?

A Now, what?

Q When you were cleaning a flange, taking the old gaskets -- you were taking it off, you have to clean it a little more. Would you ever use -- what equipment would you use to remove the gasket?

A Just what I said. Either you use a brush or a brush and a drill motor.

Q Okay.

A A putty knife.

Q Okay.

A You start probably with a putty knife. And then if you couldn't get it off with that, you would take and go to -- when you go to sort of like what I'd say chiseling it off with a putty knife, you got excessive stuff left all over it. So then you go to a brush and to a drill motor with a brush in it to get the excess off there.

And then if that didn't work, you'd get your pick. And you would go picking the rest of it off. It was a very strenuous job if it was on the steam line.

Q Okay. You mentioned removing some insulation. Is there any way for you to estimate the number of times during a week or a month that you would remove insulation?

A No. The only time we removed any insulation was back in the late '60s. And that was on the pump that lady was asking me about under the vessel I was talking about. That's the only time I removed any insulation was that.

Q Okay.

A And I did that but one or two times.

Q So during your career then, you only removed insulation one or two times?

A I don't know how many times I removed it after it was built into that mold form. Maybe -- I don't know, three or four times, you know. It wasn't that many times.

Q And each time you removed that insulation, was it so that you could make some repair to the equipment?

A Yes.
Q You had mentioned some safety meetings with Daniel last time?
A Yes.
Q Do you recall asbestos being discussed in any of those meetings?
A No.
Q We've got a good deal of information about heart troubles with a cardiac pacemaker. I know you've got that. And you had some angina and some coronary artery disease. Do you remember those diagnoses?
A Yes.
Q I'm sure you do. You've got some high blood pressure and some -- I guess the technical term is hyperlipidemia. But it just means, you know, like high fat content in your blood; right? You know, like -- what's the word I'm looking for?
A Well, you know, the last -- they may have checked my cholesterol high in my lifetime a couple of times. But once they classify you with high cholesterol, they put you on a pill. And they want to keep you on that pill.

And every time you're checked, your cholesterol is all right. So I dropped the pill. I dropped the pill, what, three years ago. I go to the doctor. The cholesterol was fine. As far as he knows, I'm still

taking the pill, but I'm not. So the pill, I threw it away.

Q Good for you.

A So I've got no cholesterol problem.

MR. TIVIN: And that ends our reading of the depositions of the Plaintiff, Dennis Seay.

THE COURT: All right. Let me ask y'all something real quick up here, if I could.

(WHEREUPON, a bench conference was held.)

THE COURT: Okay. Ladies and gentlemen, it's right at 5:00. I think probably the most prudent thing to do, we're going to watch another video just for about 30 minutes. Because if you get out right now, you're going to be stuck in traffic anyway. So you might as well use this time.

MR. PANATIER: Your Honor, you said you wanted me to go about 30 minutes. Do you want me to stop it at 30?

THE COURT: Right.

MR. PANATIER: Okay. So this -- the Plaintiffs would call Ronnie Thompson. He's a coworker of Mr. Seay from Celanese. And so we'll play that.

THE COURT: Thank you.

MR. PANATIER: Oh, and just for the record, we'll mark -- we'll mark a copy of the transcript for the court reporter so it doesn't have to be taken down when we're --

when we're done.

THE COURT: Very good.

(WHEREUPON, Court's Exhibit No. 2 was played in open court.)

MR. PANATIER: This is probably a good stopping point, Your Honor.

THE COURT: Okay. We'll resume tomorrow morning at 9:30. Just be back in the jury room at 9:30. And we'll start up at that time.

Don't talk about the case. Don't do any outside research. And continue to keep an open mind.

Thank you very much.

(WHEREUPON, the jury was excused from open court at approximately 5:31 p.m.)

THE COURT: We'll see everybody back at 9:30.

(WHEREUPON, the proceedings were concluded at approximately 5:31 p.m., to be reconvened on Thursday, October 1, 2015.)

STATE OF SOUTH CAROLINA COUNTY OF SPARTANBURG ANGIE D. KEENE, INDIVIDUALLY AND AS PERSONAL REPRESENTATIVE OF THE ESTATE OF DENNIS SEAY, DECEASED, AND LINDA SEAY, PLAINTIFF, vs. CNA HOLDINGS, LLC, AND JOHN CRANE INCORPORATED, DEFENDANTS.	COURT OF COMMON PLEAS 2013-CP-23-03915 ORIGINAL TRANSCRIPT OF RECORD **VOLUME II**

October 1, and 2, 2015
Spartanburg, South Carolina

B E F O R E:

THE HONORABLE D. GARRISON HILL, JUDGE, and a jury.

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Circuit Court Reporter

I N D E X

(PW) - Denotes Plaintiff's Witness
(DW) - Denotes Defense Witness
(IC) - Denotes In Camera

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All Exhibits were retained by the Clerk of Court for Spartanburg County.

THURSDAY, OCTOBER 1, 2015

(WHEREUPON, Court's Exhibit No. 2 was marked for identification and admitted into evidence.)

THE COURT: Good morning.

Okay. Anything before we bring the jury in?

MR. PANATIER: Real -- I -- real quick. Court's Exhibit No. 2 is the PDF printout of what has been played so far and what will be played of the video of Ronnie Thompson. So we've already marked that with the court reporter. And that will be Court's Exhibit No. 2.

THE COURT: Okay, sir.

MR. TIVIN: And, Your Honor, if I could have a -- Mark Tivin on behalf of John Crane.

If I could have an instruction on the Court's procedures. There may be -- I'm not positive about the testimony that's going to be coming in or how it's going to be coming in.

THE COURT: Okay.

MR. TIVIN: But there may be a point in time when I may be seeking a limiting instruction, or an instruction from the Court regarding evidence as it comes in versus John Crane versus Hoechst Celanese.

THE COURT: Okay.

MR. TIVIN: Do you want me to do that when that -- when I hear it, or when they're done?

Because I don't know exactly how it's going to be coming in. I don't know if it's going to be necessary, but I think it probably will be.

THE COURT: Well, if it does occur, we'll maybe have a discussion up here, or we can take the jury out.

MR. TIVIN: Okay. Thank you, Your Honor.

THE COURT: All right.

MS. SHOFNER: And, Your Honor, we had -- for Celanese, we had -- we would like to -- there are two documents that maybe -- that are probably going to be used with Dr. Holstein's testimony today. One is the Merewether article and then a 1946 ACGIH article.

And we would renew our objections to those articles as being against Celanese as we are premise owner and the standard and duty that were -- that we should have known or -- is different for us. And that there's no evidence and there will be no proof that we, actually, had actual constructive knowledge of those two documents.

And, therefore, we would ask for a limiting instruction that these documents are not to be offered against Celanese as a premise owner.

And it may be easier if, after you hear the testimony, we ask for that limiting instruction for you to rule on that issue.

THE COURT: Okay. It probably would.

MS. SHOFNER: Probably. But I just wanted you to be aware that those are the two documents that we would renew our objections on.

THE COURT: Thank you, Ms. Shofner.

MR. YOUNG: Judge, I talked to Mr. Panatier briefly this morning. We are moving along pretty well. And I think he was okay with -- we -- I'm going somewhere to see one of my daughters. And we're both on the 6:30 flight tomorrow out of Greenville.

And we were just going to ask -- make a joint request, I believe, that we could leave just a little early tomorrow.

MR. PANATIER: And with the -- with the promise that we're right on schedule. Our case -- our case, we probably won't even fill the day tomorrow. The only other thing we have to do for our case in chief is their corporate representatives, who they're bringing next week.

So all of our evidence -- our experts will be done. Our family will be done. Our videos will be done. They're just going to hold our case in chief open for those two corporate reps, so.

MR. YOUNG: And, Judge, we feel like we'll be finished with the evidence for sure by Wednesday afternoon.

THE COURT: Everybody will be through by Wednesday;

and we'll have the charge and --

MR. PANATIER: We can close Thursday probably.

THE COURT: Thursday morning?

MR. PANATIER: Yeah.

MR. YOUNG: Yes, sir.

THE COURT: All right.

MR. YOUNG: I just wanted to give you a heads-up, because I know you want us to finish, so.

THE COURT: Okay. Well, we'll, certainly, accommodate that so everybody can make their flight.

MR. PANATIER: Thank you, Your Honor.

THE COURT: Thank you.

MR. YOUNG: Thank you, Your Honor.

MR. PANATIER: And we're going to start with Dr. Holstein, and then go back to the video.

THE COURT: Okay. We can bring the jury in.

(WHEREUPON, the jury came into open court at approximately 9:48 a.m.)

THE COURT: Well, I haven't had to stop for a train in a long time, but I did this morning. And that's why we're running behind. That's the same train that went by my freshman dorm at Wofford College. And so I had a panic attack, too, so.

All right. You can call your next witness. Yes, sir.

MR. PANATIER: Thank you, Your Honor.

We're going to interrupt the video that was playing yesterday to call a live witness.

So, at this time, the Plaintiffs call Dr. Edwin Holstein.

THE CLERK: Place your left hand on the Bible and raise your right hand.

WHEREUPON,

EDWIN HOLSTEIN, M.D.,

after first having been duly sworn, testified as follows:

THE CLERK: Thank you.

Have a seat.

THE WITNESS: Thank you.

MR. PANATIER: Good morning, everybody.

DIRECT EXAMINATION

BY MR. PANATIER:

Q All right. Dr. Holstein, can you introduce yourself to the ladies and gentlemen of the jury?

A My name is Dr. Edwin Holstein.

Q Okay. And it's up there. And so, yesterday, we had a witness who had a doctor in front of his name, and he was not a medical doctor. What type of a doctor are you?

A I am a medical doctor.

Q Okay. So does that mean that you were trained as a doctor that would treat people?

A Yes.
Q Okay. And throughout your career, have you treated people, as well as evaluated people's potential for getting diseases or having dangerous exposures?
A Yes, sir, I have.
Q Underneath your name, it says, occupational medicine. Is that your area of specialty?
A I have a few areas of specialty, but that's the one I've mostly made my career out of.
Q Okay. What are your other areas of specialty?
A I was originally trained in the field of medicine that is called internal medicine. And then later on, preventive medicine with a subspecialty in occupational medicine.
Q You handed me an updated résumé yesterday. I'm going to go ahead and put that on the camera here. There we go.
All right. Dr. Holstein, so you live in Boston?
A Just outside.
Q Okay. And, first of all, did you go to college?
A I did.
Q Okay. Where did you go to college?
A I went to Harvard College in the Boston area.
Q Okay. And did you have a major in undergrad?
A Biology.
Q And did you go to graduate school?

A I did.
Q Okay. Where did you go to graduate school?
A Before I went to medical school, I just went down the road a couple miles to the Massachusetts Institute of Technology. It's usually just known as MIT. And I did two years of research on how the brain works.
Q Okay. So Harvard, MIT, you were really slumming it, I guess. There's MIT.
Now, you didn't get your doctorate or your doctor of medicine there, you continued your education; fair?
A Yeah. That was -- MIT was before I went to medical school.
Q Okay.
A And after that, I went to the University of Pittsburgh where I did my first two years of medical school. Then I made a voluntary transfer to Mount Sinai School of Medicine, which is in New York City. I did my last two years of medical school there. I graduated in 1971, which is when I got my MD degree.
Q Okay. Before I get too far into this, let me switch back to the computer. And I want to go through sort of the outline, what we're going to talk about today -- all right -- with you, Dr. Holstein.
The first thing is we'll talk about your background, your education, and your experience. We're kind of

already doing that.

Is that something you're prepared to talk about?

A I'll talk about myself all day long, if you want.

Q All right. What diseases do asbestos cause? Now, is this something that you have studied?

A Yes.

Q Okay. Have you studied the methods that scientists use, and that you yourself, as a scientist, that you use to determine whether or not something like asbestos can cause disease?

A Yes, sir.

Q Okay. State of the art, or what I like to call is what was known about a disease or what should have been known. Is that something you can talk about?

A Yes, sir.

Q Is that something you've studied before?

A Yes, I have.

Q And have you talked to other juries about that topic?

A I have.

Q Causation. So how asbestos can cause diseases. Is that something you're prepared to do?

A Yes, sir.

Q Okay. How people can be exposed to asbestos working with different products. Is that something you're prepared to talk about?

A Yes, sir.
Q And then, lastly, have you evaluated Dennis Seay's exposure to asbestos?
A Yes, I have.
Q You have a pile of documents up there. Did you review his testimony, the testimony of Ronnie Thompson?
A I did.
Q Okay. And, luckily, the juries already seen and heard from Mr. Seay. So we don't have to do this in a hypothetical. They've already heard it. So is that something you reviewed in this case?
A I did. I read -- I didn't see the video. I read the written word --
Q Okay.
A -- in the transcript.
Q All right. So let's go back to your background here. And let's see. Education. Experience. Service. Okay. Service.
Did you -- did you have any service?
A I served in the United States Air Force. That was from 1970 -- I get the years mixed up. That was 1974 to 1976. I was a major. And I was chief of medicine at an Air Force hospital.
Q Okay. Which one?
A It was called Pease, P-E-A-S-E, Air Force Base in New

Hampshire.

Q All right. Now, you currently run your own consulting practice; right?

A I do.

Q And is that Environmental Health Associates?

A That's right.

Q All right. And is -- today, you're talking to a jury. This is something you've done many times; fair?

A Yes. I have done that.

Q I have personally asked you questions in front of juries?

A Yes, you have.

Q Okay.

A So have these gentlemen.

Q Okay. I'm sure they have.

Now, it, also, says you are a clinical assistant professor, Division of Environmental Science's, Mount Sinai School of Medicine.

A Yes.

Q So have you taught about environmental sciences, first of all?

A Yes, I have.

Q Have you taught about occupational medicine?

A Yes.

Q What is occupational medicine?

A Occupational medicine is pretty much what you'd guess from the name of. It's those conditions that you can get from the work you do. And it's -- you know, many medical specialties are about just one organ in the body, the heart, or the lungs, or something. This field can be any part of the body. What it has in common is that you can get it from your work.

And I've often given the example that if you look in the carpet on this floor, this was laid by somebody who probably does it regularly as a living. And wall-to-wall like this, they're going to do a lot of that work on their knees stapling this carpet in, particularly at the edges. And they can get knee problems if they do that for many years.

People who operate jackhammers can get disorders of the nerves that come out of their neck and down into their arms from the constant vibration.

And coal miners can get affected by the dust that's in coal mines.

And people who work in, let's say, dyeing textiles can be affected by the dyes that are used.

And, in this case, there are questions about whether a dust like asbestos can cause somebody to get cancer.

Q Would it be fair to say that from an occupational medicine perspective, you're evaluating potential

exposures and potential ways that workers can get sick?
A Yes. That's correct.
Q All right. Let's back up here a little bit.
Now, Mount Sinai School of Medicine -- is Mount Sinai an institution that historically has been involved with asbestos issues?
A Yes.
Q Okay. And can you explain a little bit of that for us?
A Well, sure. It's a big city medical center. It's got a hospital. And it's, also, got a medical school. And they're all together. And so they take care of patients. And they, also, do a lot of teaching. And they do a lot of research.
And starting in the 1950s -- late 1950s, one of the areas that Mount Sinai became known for was research on the health effects of asbestos. And that was primarily due to the fact that there was a -- one particular doctor there, whose name was Dr. Selikoff. And Selikoff made this his specialty. And he started publishing a lot of research articles on it. And they became known worldwide.
And then he was able to bring in more doctors and more scientists, and make a larger and larger department studying the health effects of asbestos.
Q So I showed this book to the jury in opening. You've

seen this book before?

A Yes, I have.

Q Okay. And this was the report of what?

A So this is a report of the first really big scientific conference held on the health effects of asbestos. It was organized by Dr. Selikoff. You can see his name sort of near the top upper left-hand side of this slide.

And he brought in scientists from all over the world to discuss and to present their research on the health effects of asbestos. It was held in New York City in 1964.

And then it took them about a year to get all of the presentations by all of the different scientists into print. And they did that. And they put it into a journal, which has now been given a hard back. And so it can, also, be called a book.

Q And because I bounce around, I'm just going to ask you right now. To the extent you're asked a scientific or medical question, can you keep all of your opinions to a reasonable degree of scientific or medical probability?

A Yes.

Q All right. So going back here, continuing at the top on your education. So you went to medical school at Pittsburgh. And then you moved over to Mount Sinai?

A So we covered the first half of that. Public schools in New Jersey, then down through Harvard, MIT, University of Pittsburgh for two years, Mount Sinai for two years.

And then I started my hospital-based training in the field of internal medicine. And for that, I went back to Boston where I had been in college. And I did that hospital training at the Boston City Hospital. It was in the field of internal medicine.

And internal medicine is taking care of adults for conditions other than surgery. So it would be anything from heart attacks, to high blood pressure, to diabetes, to pneumonia and respiratory failure, kidney failure. All of that long and dismal list of conditions that we get, particularly as we get older.

Q Okay. So -- but then it looks like you -- so you did an internship and residency in internal medicine. And then two years later -- now, what happened between '74 and '76?

A That's when I was in the Air Force.

Q All right. So then in '76, then you go into occupational medicine. Why did you do that?

A Well, I'd been thinking about what I was interested in. And I had become interested in this field by reading about it. I didn't really have that much training about it back when I was training in internal medicine. There

was a little bit, but not much, but enough to pique my interest.

And I had particular -- particularly read about Dr. Selikoff's work, among others. And I decided it would be great if I could study with Dr. Selikoff. So I applied when I got out of the Air Force. And I was fortunate, he accepted me into his training program. So I went to work and study with Dr. Selikoff.

Q Now, when you're at Mount Sinai, you're doing occupational medicine. At some point, did you start to learn about, and read about, and research asbestos?

A From the day I -- really, from before I started with Dr. Selikoff, but intensively the day I got there.

Q Okay. And so what types of things were you learning about, and what types of research were you doing?

A Well, I personally was engaged in different kinds of research, mostly of the kind that's called epidemiology. And this is a study of the patterns of disease in large groups of people.

And I participated, also, in trying to answer some very basic questions about asbestos, things such as how much exposure is required to cause people to get sick? Is it a lot, or is it a little?

How about family members who might get exposed to dust that comes home on the clothes? Are they at risk of

developing these illnesses?

How about bystanders? Not the one who's, actually, themselves working with the asbestos product with their own hands. But how about the person who's working 10 feet away on another job?

If you're going to get sick from asbestos, is it going to happen right away, or is it going to happen after many years?

So a whole series of questions of that sort. Because they -- if you know the answers to those questions, then it helps you figure out how to protect people from the effects of asbestos.

Q And would that be called preventative medicine?

A That was called preventive medicine, yes.

Q And you mentioned -- I just wanted to ask you about this. You mentioned a scenario where someone might bring home asbestos on their clothing. Have there been cases of people who got disease who were just laundering the clothing of workers who worked with asbestos?

A Yes. I helped in research on that and other -- with Dr. Selikoff. And other places around the world did similar research. And the answer is, yes. Household family members, people who live in the same house can and have gotten sick from the asbestos that just comes home on the clothes, or on the hair and the boots of the actual

working person.

Q And we heard this concept yesterday from Dr. Brody called "individual susceptibility." So have there been scenarios where someone works with asbestos day in, day out, they come home, the -- their spouse washes their clothes, spouse gets mesothelioma, but worker doesn't?

A Yes. There have been such cases.

Q Okay. You talked about internal medicine. So before I get past that whole topic, it says here you're board-certified in internal medicine. What is board certification?

A Board-certified means that you've taken the training, you've passed an exam. And you're recognized as a specialist in that field.

Q And the same with board certification for preventative medicine and occupational medicine specialty, you're board-certified in that?

A Everybody likes to add a syllable and call it "preventative medicine." When I grew up, it was always just "preventive medicine."

Q Oh, preventive. Okay. So I went with the extra syllable. I'm sorry. Preventive medicine. You are board-certified in that; Fair?

A Yes. That's correct.

Q Okay.

A It Means I took the training, passed the exam.
Q Okay. And then under other certifications, it says NIOSH A reader. Now, can you explain -- what is that?
A Well, That's really a minor -- a very minor thing. I don't know why I still have it on my résumé.
But that means that you took a two-day course in using -- the right way to use certain terminology, certain letters and numbers to describe X-rays of people exposed to dust diseases.
Q Okay. And if you -- if you -- to be clear, if you pass that exam, you're a B reader, if you don't pass, you're an A reader.
A If you take the course, you're an A reader --
Q Oh.
A -- if you then pass an exam, you're a B reader.
Q Okay. So you're an A reader; right?
A I am.
Q Okay. And did you look at X-rays in this case?
A Yes -- no. In this case?
Q Yeah, in this case.
A No.
Q Okay. Did you review the medical records in this case?
A I did.
Q Okay. Let me ask you this. From your review of the

medical records, what disease did Dennis Seay have?
A Well, he had malignant mesothelioma.
Q Okay. And you don't disagree with his treating physicians, based on the records you reviewed; is that fair?
A I agree with that diagnosis.
Q Okay. Now, you were not his treating doctor; right?
A Correct.
Q Okay. And you did not meet Dennis Seay; right?
A Correct.
Q What you know about him is from reading his testimony and looking at his medical records; correct?
A That's right.
Q All right. Do you have an opinion as to what caused his mesothelioma?
A I do.
Q What is that?
A I believe that his mesothelioma was caused by the action of the exposures to asbestos that he had, which were pretty much limited to the period of time when he was working at Hoechst Celanese.
Q Okay. And we'll talk a little bit more about that shortly. You're licensed to practice medicine?
A I am.
Q Okay. And that's in Massachusetts where you live --

A That's right.

Q -- right?

Has that license ever lapsed for any reason?

A Yes, it has.

Q Okay. And why?

A Well, two reasons. First of all, in my training as I moved from place to place, for instance, when I went from Massachusetts to New York, I allowed my Massachusetts license to lapse because I got a New York license instead. I, also, got a New Jersey license.

But there did -- I think what you're referring to is there did come a time when I made a mistake, and I allowed my license to lapse. And I didn't have a license anywhere.

And the reason for that is that a medical license is like a driver's license. You've got to renew it every couple years. They mail you the forms, you fill out the forms, you write a check, you put that in the envelope, too, and you send it in. And unless you've done something wrong, your license gets renewed.

And I had changed my office from New Jersey to Massachusetts -- back to Massachusetts. My mail did not get forwarded. I didn't get the application materials. I forgot. I overlooked it.

And so I did have a period of two years where I

thought I was licensed, but I was not, until I discovered the mistake. I filled out the forms. I wrote a check. I submitted it. And within two to three weeks, my license was renewed.

I did not have any discipline, or censure, or reprimand of any sort. So nobody took my license. Nobody disciplined me. But it is true that there was a period of two years when I thought I had a medical license. But, due to oversight, it turned out that I, actually, did not.

Q Okay. So this was an issue of your mail wasn't forwarded, you didn't renew it. You didn't like do surgery on someone and cut off the wrong arm?

A Correct.

Q Okay. A few more things I want to ask about for your background. You're a member of the American Medical Association, a pretty big organization?

A Yes.

Q And then I want to ask you about this. Consulting medical director, Port Allegany Asbestos Health Program. What is that?

A So there's a little town in the western part of Pennsylvania called Port Allegany. It's a very rural area, dotted with small towns. And they -- this particular town has a couple factories in it.

And one of the factories is owned by the Pittsburgh

Corning Corporation. And there was a period of time in the 1960s and 1970s when they made a product out of asbestos. They made a material that was designed to go on pipes and to insulate the pipes.

And that material had a high concentration of asbestos in the product. And, therefore, a lot of the people who worked there became exposed to asbestos during those years making that product. And, also, family members were -- also, in the way that I described to you before. And all together, there were several thousand people who had probable exposure to asbestos from the years they made this.

So I -- Mount Sinai was approached by the union and later by the company to see what might be done to help these people who had been exposed to asbestos. And, ultimately, after a number of years, it resulted in the creation of a health program. And it's got the long name, Port Allegany Asbestos Health Program. And I'm the medical director of that program. And I have been for several decades.

And I go to Port Allegany. I work with the local doctors, the local hospitals, also, the clergy, the mayor, the union, the company. And we've put together a medical program to do the best that can be done to try and preserve the health of these several thousand people who

have been exposed to asbestos.

Many decades have gone by. Many have passed away from many causes, not just asbestos. Many have moved away. So over the course of time, the program has become a little smaller. But it's still going. And I'll be going to Port Allegany again sometime in the next month or two.

Q So this was a surveillance program for workers who worked in an asbestos factory; fair?

A Medical examinations, and screenings, and health education about what they can do to help maintain their health, and, also, to educate the -- make sure the local physicians were familiar with the latest ways to diagnose and treat asbestos-related diseases.

Q All right. So would it be fair to say you were working closely with the people who were treating these individuals hands-on, and helping them learn how to spot any potential symptoms of an asbestos-related disease and help them screen for asbestos-related diseases?

A Yes. The first time the Red Sox ever won the World Series, I was sitting in the living room of one of the doctors in Port Allegany.

Q Okay. And -- now, as part of this program, have you personally conducted interviews on workers?

A Yes.

Q And is that something where a doctor might call that taking a work history, or evaluating an exposure?
A Yes. A work history or it's called an occupational history. And the idea is pretty simple. You just sit down with a person and, as part of your examination of that person, you ask them in detail about what work did you do? How did you do it? What tools did you use? How long did it take. Did you saw it? Did you file it? Did you drill it? Did you nail it up? Did you tear it down?

And just simple, but important questions of that sort, which, if you do it with hundreds and, in fact, thousands of people, you begin to get a sense of how people worked with various materials in the working environment, and what kinds of exposures -- the magnitude of the exposures that they suffer when they are doing what they do.

Q And in addition to doing work histories, did you ever take part in actual air monitoring surveys of any workers to see what was in the air using samplers that you might put on a person, or put around a person's work area?
A Well, in my training, I was taught how to do air measurements of asbestos. And I did some. But not -- your description wouldn't quite fit what I, actually, did.
Q Okay. Well, explain what you did then.
A I took air measurements of asbestos in a school

during the summer to see what the asbestos air levels were in the public school. Because at the time, back in the '80s, there was a lot of -- a lot of concern because there were many asbestos-containing products used in the construction of schools.

So we wanted to get measurements during the summer when the school was empty and quiet, and compare that to measurements later on when it was full of kids who'd be throwing pencil darts in the ceiling.

Q Okay. Now, let me ask you this question about asbestos products generally. Is it generally a true statement that if it's just sitting there, and no one's touching it, no one's working on it, no one's messing with it, so long as that's the case, generally speaking, is it going to release a lot of asbestos?

A It may -- it may release a little bit from natural vibrations, a train going by, a big storm, particularly if there's a leak in the roof and it's -- then after a while it dries out. And then it's more crumbly than it was before.

So, yes, maybe a little bit. But, typically, if it's just totally left undisturbed, most circumstances are not much to worry about.

Q All right. So when you evaluate, for instance, somebody like Dennis Seay, are you looking for the types

of operations that he did himself, as well as those that were going on around him to evaluate his exposure to asbestos?

A That's correct. I don't care if he walked down a hallway that had some asbestos in the joint compound in the sheetrock that makes the walls of the hallway. I don't care about that.

But I do care about what was he tearing out? What was he sawing? What was he ripping? What were other people around him doing of that sort?

Q Okay. Let's just ask a few more questions about this. Have you -- I'm not going to ask you about all these. Have you presented on asbestos and occupational medicine repeatedly since the 1970s?

A Many times.

Q Okay. Have you done that on asbestos?

A Yes.

Q And, in fact, there's -- there's one down there on asbestos hazards in schools; right?

A There it is, next -- second from the bottom.

Q All right.

A That was in Atlanta.

Q There is one second from the top on asbestos disease in workers of the chemical industry; right?

A Yes.

Q And that was in Yugoslavia back when --
A Back when there was a Yugoslavia.
Q Yeah, right. It doesn't exist anymore; right?
A It Doesn't exist anymore. It's Broken up into about six countries.
Q Okay. And then you have some publications as well. You've published a few times on asbestos; is that fair?
A Yes. That's right.
Q All right. Have you stayed abreast on the medical and epidemiological literature as it pertains to asbestos?
A Constantly. Yes.
Q Okay. And have you stayed up to date on the regulatory and scientific bodies, and their findings from their research on asbestos?
A Yes, sir, I have.
Q Okay. Have you stayed up on the literature having to do with the different ways different products can release asbestos?
A Yes.
MR. PANATIER: Your Honor, at this time, we would offer Dr. Holstein as an expert in occupational medicine with a focus on asbestos.
THE COURT: Any voir dire?
MR. TIVIN: Your Honor, we have no problem with -- not at this time on qualifications. But we would object

to Mr. -- Dr. Holstein's expertise on the ability of different products to release fibers.

THE COURT: Well, he's qualified as an expert in the field that you offered, Mr. Panatier. You can continue.

MR. PANATIER: Okay. Thank you, Your Honor.

BY MR. PANATIER:

Q What is the rate that you charge for your time, sir?

A I charge a lot. I charge $700 an hour.

Q All right. Now -- and you've done this many times; fair?

A Yes, I have.

Q Okay. Let me ask you one other thing. Let me bring this back to my PowerPoint. Okay. So we went through all of this.

I wanted to ask you about your work with government bodies. Have you ever done any work with different government bodies?

A Yes, I have.

Q Okay. And what's that?

A Well, I've worked with something called OSHA. I've worked with something called NIOSH. I've worked with the National Cancer Institute. I've worked with the Environmental Protection Agency. Those are the main government -- federal government agencies.

I've, also, been asked to testify before various

state legislatures at one time or another. Sometimes, I've consulted to state departments of health, sometimes to state environmental -- environmental departments.

Q And have any -- has any of that involvement in -- dealt with the issue of asbestos?

A Most of those that I've mentioned were asbestos. Some were other topics.

Q Okay. And, in fact, this is just a -- this is a quotation from the Federal Register from the Department of Labor. That's OSHA; right? It says Occupational Safety and Health Administration.

A Yes, O-S-H-A. OSHA, yes.

Q And they, actually, quoted you about the progression of the disease asbestosis; right?

A They did.

Q Okay. And this would just be your general description of the progression of that disease when it is severe; is that fair?

A Yes.

Q Okay. And can asbestosis be a very severe disease?

A It can be. Yes, it can be very severe. It can even be fatal. But it has the whole range, the whole spectrum. It has mild cases, too.

Q Asbestosis, was that a disease that was published about in the early 1900s?

A Yes, it was.

Q Okay. So let's -- let's get to that. So I want to talk to you a little bit about what was known and when. And I will move this back to the camera. And then I'll use the easel probably.

Okay. So when we talk about asbestos hazards generally, you said that you had reviewed the literature on that and what was publicly available about asbestos hazards; is that fair?

A Yes. That's true.

Q Okay. So to give the jury a thumbnail sketch of the type of information that was available, first of all, give us an idea. From the 1800s until -- let's say OSHA. When did OSHA come out?

A 1971.

Q Okay. So OSHA comes out in '71. From the 1900s to '71, can you give us some appreciation for just how many different articles had been published that were publicly available on the issue of asbestos and asbestos disease?

A Sure.

Q Okay. What is that?

A Well --

Q Without a specific number --

A -- you're putting me on the spot here.

So up until 1970 -- '64, 1964, someone actually,

counted. And there were about 700 different scientific/medical articles on the health effects of asbestos by 1964. And at that point, it began to really mushroom. And I couldn't possibly count them now. But it's in the many thousands of scientific and medical papers -- research papers on the health effects of asbestos.

Then, in addition to that, there -- in the recent years, there's been an awful lot, of course, in lay publications as well. But I'll put an asterisk next to that. Because there were some -- even in publications designed for the layperson going back to the 1930s about the health hazards of asbestos.

Q When you say "for the layperson," you mean a nondoctor, someone who is not necessarily specialized?

A That's right. Just an ordinary person in their home.

Q All right. Will you -- as we go through sort of this thumbnail sketch of this information, will you call us out on those, too?

A I'll do my best.

Q Okay. So if you wanted to, say, go back to the 1800s or 1900s, where would you want to start, just as an example of what was available?

A So the first publication that I know of that was ever published showing that asbestos could be -- could cause a

fatal illness --

MR. YOUNG: Your Honor, excuse me.

THE COURT: Yes, sir.

MR. YOUNG: This is the objection we had earlier.

THE COURT: Okay. Do y'all want to come up here and discuss it?

(WHEREUPON, a bench conference was held.)

BY MR. PANATIER:

Q All right. Dr. Holstein, where would you start?

A The first article that I'm familiar with showing that asbestos can cause a fatal illness was published in English in 1898.

And then there's kind of a -- I know more was going on, but I don't have a record of it. I just know that there was more recognition. Because around 1915 -- or 1918, I'm sorry -- a well-known X-ray specialist published a paper on what the scarring in the lungs that asbestos can cause looks like on X-rays.

Then in 1927, a doctor in England named Cooke published another case, a fatal case of scarring of the lungs, asbestosis due to asbestos. And --

Q Let me stop you there.

A -- he --

Q Let me stop you there. Did he, actually, call it asbestosis then?

A I was just starting to say that.
Q Okay.
A He was the one who suggested the name -- a name for this disease. He called it asbestosis. And the name stuck. And it's used to the present day.
Q And that's Cooke. And it's with an "E"; correct?
A Yes.
Q Okay. What's the next sort of signpost article that you'd like to address?
A The next milepost was 1930.
Q Okay. What happened in 1930?
A In 1930, two researchers, doctors, named Merewether and Price did the first study that is called an epidemiologic study where they looked at large groups of people. And, in particular, they were looking with people who used asbestos in factories in England to weave asbestos into cloth. Because it could be used for a variety of purposes.

And here, they found for the first time that this illness, the scarring of the lungs, didn't just affect, perhaps, an isolated person here, or an isolated person there, or an individual case here or there, but that in a factory setting like this, it could affect hundreds of people and make them ill.

And so they carried out these studies. And then

they, also, did two other very important things. After they demonstrated that there was a lot of illness among these people from asbestos, including disabling illness. And they, also, learned about deaths, although, obviously, they couldn't examine people who had passed away. But they, also, accumulated information about deaths.

They did two other important things, which is, they, also, wrote down ways of diminishing the level of dust, keeping the dust down in the factory so that they could -- so that cases of this could be prevented by having people exposed to less asbestos dust.

And the other important thing they did was they said, look, this hazard doesn't exist only in textile industries using asbestos. This clearly will be a hazard in many other industries. And they elaborated on that to -- to -- in an useful way.

So they did a very comprehensive article, the first epidemiological study and, perhaps, the first, also, discussing the hazard in numerous industries and how to control it.

Q Under prevention, what types of methods did they suggest for preventing these diseases?

A Very commonsense methods, and simple methods. Number one, if you can use something else besides asbestos, use something else.

Number two, wet it down. If you can do that in the process you're engaged in, wet it down. Because if something's wet, it doesn't give off so much dust.

Number three, if you can, provide exhaust ventilation. What is that? That's like the -- that's like the oven fan above your stove. It's a -- it's a vacuum device. It sucks the fumes and the dust out. Except when you're dealing with a deadly substance, you have to design it scientifically to be sure you're getting all the dust out. But it's -- in concept, it's very simple.

Q So ventilation. I think I gave ventilation an extra L, but --

A Yeah.

Q So exhaust ventilation. What else did they recommend?

A They, also, recommended separating people into -- who are doing different jobs. Why? Well, I already mentioned in passing bystanders. If I'm working -- if I'm sawing something that has a biggest -- a substantial asbestos content in it, and I'm creating dust from doing that, you're going to be breathing the same dust, 10, 15 feet away.

So why not put you in a separate room to do your work, and I'll do my asbestos sawing in my work. I might

get exposed, but, at least, there aren't 15 other people getting exposed to asbestos.

Q Did they call that isolation?

A Well, they, actually, called it segregation.

Q Segregation.

A But they have a different -- that has a different connotation today. But what --

Q When they were talking segregation then, they were talking about separating the workers?

A Exactly.

Q So I'll put separating. What else?

A They, also, recommended that, if necessary, give people respiratory masks and respirators to filter out the dust that they would breathe.

And last, and very importantly -- I might have missed one along the way. But, also, very importantly, they said you have to educate the worker. They used British language. They said something like, you have to give the worker a sane appreciation of the risk. So this is fancy language, which, basically, meant train and warn.

Well, why do you have to train and warn? The answer is this. A lot of those other measures, if you're the person, actually, doing the work, they're a pain in the neck. Do you want to wet everything down and then work on this soggy stuff? Who wants to do that? Who wants to

wear a respirator? It's uncomfortable. And, likewise, other things that I mentioned.

So human nature will be to cut corners if you don't understand why you're -- you have to do this, And especially with asbestos. Because asbestos doesn't smell bad. It doesn't make your eyes water. It doesn't sting your eyes or your nose.

If you open up, by way of contrast, a bottle of ammonia that you might have in the house for cleaning purposes. And when you were young, maybe you took the lid off and you took a sniff of it. And you only did that once in your life because it will snap your head back, it's so pungent. It warns you that it has some toxic properties to you.

Asbestos has nothing like that. So unless a person, or a sign, or your supervisor is telling you, this material is very hazardous, in fact, it can cause death, and trains you in that and trains the people around you in that, you're not going to understand why you have to undertake these control -- dust control mechanisms that, frankly, are sort of a pain in the neck to do.

Q So let me ask you. So this was 1930. These methods for prevention that you went over that they talked about in 1930, are they just as true today, 85 years later?

A Absolutely. The same -- the same principles are the

ones we use today.
Q Okay. Anything else from Merewether and Price, 1930?
A Well, they, also, talked about various industries, although that might have been in a follow-up publication in 1932.
Q Let me ask you about that one. I'm not going to bring out all of these papers. But let me ask you about that one from 1932.
So Let me ask you if this is that, Memorandum on the industrial diseases of silicosis and asbestosis, July, 1932?
A That's it.
Q And this is out of England where Merewether and Price were?
A Yes. And like the 1930 article, both of them got reprinted here in the United States, and were found in -- would be found in medical libraries in the United States.
Q So in this article -- we're not going to go through this whole thing. But you said they addressed products in industries --
A Yes.
Q -- regarding asbestos.
A Yes, they did.
Q What type of information did they provide?
A Well, they said that any industry where this material

is -- occurs as a dust will be a hazardous -- a potentially hazardous industry. And they gave specific examples. They said, any industry in which you turn, or grind, or abrade asbestos in a dry state is a potential hazard.

Q And this is on Page 12. And it's a very old publication. It's a rough copy. But let's look at this one right here, Industries and processes in which asbestosis occurs. Now, asbestosis, this is --

A Oh, yeah.

Q -- this is about five years after the Cooke paper in '27; right?

A Yes.

Q Okay. So we already had the disease asbestosis; fair?

A Correct.

Q Okay. And this says, Processes involving exposure to asbestos dust which are known to give rise to asbestosis, or in which -- can you read that?

A The conditions, I think.

Q -- the conditions are such as to liable to produce the disease are the breaking, crushing, disintegrating, opening, and grinding of asbestos, and the mixing or sieving of asbestos or any admixture of asbestos.

I'm going to stop there. What does "admixture" mean?

A Oh, lots of materials and dusts have -- are a mixture of various things. It's not all asbestos. It can be asbestos, plus other dusty materials in there.
Q So they're not just talking about something that's a hundred percent asbestos. They're talking about asbestos, plus other ingredients; fair?
A Correct.
Q Okay. And it says, The maintenance of asbestos textiles, the making of insulating slabs or sections, and the making or repairing of insulating mattresses composed wholly or partly of asbestos, and the sawing, grinding, and turning in the dry state of articles composed wholly or partly of asbestos such as -- I think that's, motor car, brake, and clutch linings, electrical connectors, and packing, packings and jointings; is that right?
A Yes.
Q Is "jointings" just another word for gaskets?
A "Jointings" is a British word for gaskets.
Q And so this is '32. We've already got mention of gaskets as one of many different things that could lead to the disease asbestosis; is that fair?
A Yes.
Q All right. They reissued that same publication in '35; is that right?
A 1930, 1932, 1935, yes.

Q All right. We're not going to --
A With some variations, but a lot of overlap, also.
Q All right. So going back to our timeline. We've gone into the 1930s now. What is another article that you might say this one had some important data that the jury should know about?
A Well, we'll jump forward to 1935. And we'll come right here to South Carolina where two doctors named Lynch and Smith published their research findings, which was the first article that suggested that asbestos might cause a cancer, namely lung cancer, not mesothelioma, which is different from lung cancer. But they suggested on their findings it might cause lung cancer.

So everything up until that point had been about scarring of the lungs, not cancer. South Carolina, 1935, possible lung cancer from asbestos.
Q Okay. So is that something we call a -- is that an epidemiological study, or is that something else?
A No. That was a case study.
Q A case study. All right. So I'm going to put that -- I'm going to put that here.

What's the difference between a case study and an epidemiological study?
A A case study is where a doctor, a scientist writes about one, or two, or three, or four, or maybe five or six

patients who have something curious in their condition, something unusual, something that hasn't been noticed much. It has not been reported much in the past. And the point of it is to say, well, maybe we're on to something new here. And that's what a case study generally does.

An epidemiologic study looks, typically, at hundreds to thousands, and in some cases even millions, of people to look at patterns of disease in large groups of people.

Q Let me ask you this. And I may be jumping ahead a little bit. But over the last 100 years in this country, approximately how many different products utilized asbestos?

A Well, at the peak, the best estimate is about 3,000 different products utilized asbestos.

Q Okay. And do we have an epidemiological study for every single product that had asbestos in it?

A No. We might have epidemiologic studies for -- I don't know -- 10 or 20 of those products. There's no point from a research point of view.

Once you've proven that asbestos is hazardous in this product and hazardous when it occurs in that product, or this industry, or that industry and you know it's a hazardous substance, there's no research point in then methodically going to each product that had asbestos in it and trying to do a big epidemiologic study involving

thousands of people. It's a waste of money. It's a waste of time. And it doesn't teach you anything that you don't already know, or very little that you don't already know.

Q Okay. So '35, we've got this case study. Asbestos may cause lung cancer. They saw that case. What happened after '35?

A Well, I would point next to 1938, which is, also, in the Carolinas.

Q Okay.

A A study here in the United States by the United States Public Health Service of asbestos textile factories, just like Merewether and Price had done in England in 1930. And they studied textile workers in the Carolinas who made cloth out of asbestos. And, like, recent -- I'm sorry -- like Merewether and Price, they found a good amount of disease in those people.

But they went one step further. And they said, we're going to suggest a particular air concentration of asbestos. And we're going to recommend that factories all keep their air concentrations of asbestos below that level. And if we do that, we think we can eliminate many cases of asbestosis, not all of them, but many of them.

And they used a measurement device that's not used anymore. And the level of asbestos concentration in the air they suggested was five million particles per cubic

foot.

Q Did they have a name for that level, what they call that level?

A Yeah. They called it a threshold limit value, or they called it a peak exposure limit.

Q So TLV, threshold limit value. And they said five million particles per cubic foot?

A Mppcf.

Q Okay. Now, I'm going to stop here for a second. So we have a cubic foot; right? A square of air.

A Yes.

Q And they said, we think we can prevent most cases of asbestosis if the total dust in the air is less than that?

MR. TIVIN: Objection. Leading.

THE COURT: Okay. Rephrase it.

BY MR. PANATIER:

Q Okay. Why don't you characterize for us what they mean by five million particles per cubic foot?

A A cube -- a -- one cubic foot of air -- in other words, a cube that's one foot this way, one foot that way, and one foot that way. Just imagine a box. And each dimension of the box is one foot. The amount of air in that is one cubic foot of air.

And they're saying keep the -- if it's got asbestos in it, keep the dust less -- to five million particles of

dust in that box. If that -- so keep it below that. And we believe that will eliminate many cases of scarring of the lungs.

They said nothing about cancer. It was only about scarring of the lungs.

Q Let me ask you. So when they set this guideline of five million particles, were they saying five million asbestos particles or five million particles of dust that may have asbestos in it?

A Well, that's exactly why we don't use that measurement technique anymore. Because it didn't make a distinction between asbestos and other kinds of dust that might be mixed in there.

So you can imagine that if the dust was only one percent asbestos, it would be a different situation than if that dust was a hundred percent asbestos. This measuring technique didn't make any distinction between that.

So -- so that's a weakness in how it was done in those days. It was the best they had. And, now, we have a -- we have better methods.

Q But the bottom line is in the 1930s, fair to say, you already have people saying, look, let's start looking at some potential guidelines for asbestos exposure because it's dangerous; is that fair?

A That's a good summary.
Q All right. So after 1938, what's next?
A Then I would point to various states over the next 10 years. Many states then said, this is a good idea. Let's -- and they all published guidelines, let's keep it below five million particles per cubic foot. Many states passed either laws, or regulations, or guidelines.

There are differences because a guideline is a suggestion, but you don't have to follow. A law is a law, and you have to follow it. So some states did laws. Some states did guidelines. But many of them adopted that suggestion from the United States Public Health Service.
Q After that, where do we go?
A Okay. Next, quickly, I would go to 1943.
Q Okay.
A Which is the first date that somebody published an article saying that asbestos might cause mesothelioma.
Q Who was that?
A Well, that's the -- that's the point. That was a guy in Germany. And it was written in German. And it was 1943 in the middle of the Second World War when we were fighting against Germany.

And so you can reasonably ask the question, did we learn about that here? And if so, you know, how -- when did we learn about it? Because that was not a -- that was

not a time when we were, actually, having collegial discussions with scientists in Germany.

Q We weren't saying, oh, this nice German doctor --

A Yes.

Q -- came up with this at that time?

A That's correct.

Q Okay. Fair enough.

A So then there was another one in '48.

Q Okay. 1948. Yes.

A But the next one I'd point to would be 1949, which was back here in America.

I think you're running out of space here. But that's all right. That's up to you.

Q I've got another page.

A Okay. This -- 1949 was an article in a medical journal called the Journal of the American Medical Association. It's usually just abbreviated as J-A-M-A or JAMA.

JAMA, at the time, was the most widely read medical journal in the United States. Most practicing doctors got it in their mail.

In any case, an editorial was written in that -- in 1949 in that journal saying that there was a linkage between asbestos and lung cancer. Because more cases -- I only told you about the case from South Carolina in 1935.

But there were -- more and more cases were being reported of people who worked with asbestos getting lung cancer.

And in those days, lung cancer was an unusual disease, because people hadn't started smoking yet. So to get a case was a little bit unusual. And then to start finding more and more cases where they had, also, worked with asbestos, you're putting -- you're starting to put two and two together. And in 1949, the -- an article appeared saying, we think it's now proven.

Now, my own view is that it wasn't really proven until 1955. That's just a matter of judgment. Different people could reasonably disagree on whether it was really nailed down by 1949, or really nailed down a little later. My own view, it was nailed down in 1955.

Q Okay. And we'll talk about '55. You did say people really hadn't started smoking until this point. You weren't saying people didn't smoke. What did you mean?

A Well, people smoked pipes, but they didn't smoke as much. Cigarettes were not being mass produced the way they are now. The real increase in smoking began to occur among men in the '20s and '30s. But the lung cancer comes 20, 30, or 40 years later. So the lung cancers were not yet appearing until -- in large numbers until the 1940s and 1950s.

So I think it was more detail than we need. But the

point is, back in 1935 to 1950, a lung cancer was kind of unusual. There weren't many of them. There was some, but not like today.

Q Okay. You mentioned 1955. I don't want to skip ahead, but is that the next date?

A Yes. 1955 is the next one.

Q All right. 1955. What publication are we talking about?

A The researcher was named Doll, Dr. Doll, D-O-L-L, back in England. He did the first epidemiologic study of the connection between asbestos and lung cancer, and concluded that there was a connection. And that, in addition to all the case studies, the individual case studies like the first one here from South Carolina, in my view, made it beyond any reasonable doubt in 1955 that asbestos caused -- causes lung cancer.

Q Beyond a reasonable doubt. Okay.

After 1955, what's next?

A The next big one is 1960. Something similar happened, this time from South Africa where there are a lot of asbestos mines. And doctors there found 33 cases of mesothelioma, what until then had been considered a rare disease, hardly ever seen. A doctor could go their whole life and never even see a case. And, suddenly, here's 33 cases.

And what do they all, except one, have in common? They all were exposed to asbestos in connection with the asbestos mines. And that article made it beyond any reasonable doubt that asbestos causes mesothelioma.

Q Was there a specific type of asbestos that was being mined there?

A Well, the cases that they reported were due to the kind of asbestos called crocidolite asbestos.

Q And who was the author's name?

A The author was Wagner, W-A-G-N-E-R, except he said it Wagner, in the German style or the Dutch style.

Q Okay. We heard about him yesterday.

Now, in this paper, this was a -- 33 cases from this type of asbestos, crocidolite. Did he detail in his -- from his review other cases and other publications having to do with mesothelioma?

A In his publication?

Q Yes.

A Yes.

Q Okay. And what did he discuss there from other publications?

A Well, he pointed -- couple years back in time where some doctors in Canada, where there were, also, asbestos mines, reported cases of mesothelioma there. The difference is that in Canada, what they were mining was

chrysotile asbestos, which I think you've already heard of. You probably heard quite a bit of that from Dr. Brody, I would guess.

So although the paper by Wagner in 1960 is kind of the well-known one, a big landmark study, there, actually, was an earlier paper reporting a couple of cases in Canada of mesothelioma from people working in or around the chrysotile mines there.

Q And we heard from Dr. Brody yesterday. He said about 95 percent of the world's use was chrysotile. Do you agree with that approximation?

A I do, yes.

Q All right.

A I don't know if he said -- did he say the world or the United States?

Q I think he said the world.

A Okay. I know it's true for the United States. I'm not quite as sure about the world.

Q So I'll just make that note. So chrysotile is approximately 95 percent of what was used in the U.S. for your opinion; fair?

A Thank you.

Q All right. After 1960, what's -- what's the next thing you would point to?

A Well, then there was a flowering of cases about

mesothelioma and asbestos. A whole bunch of them started coming out in the next -- over the next few years.

And -- but then the next big event was Dr. Selikoff's conference in 1964 where you held up the book.

Q Okay.

A Because that was the first big international conference bringing researchers from 20, 30 countries around the world all together in New York City to present what their researchers -- research had shown on the health effects of asbestos.

Q Okay.

A Including asbestosis, including lung cancer, and including mesothelioma.

Q What I'd like to do is just show you a few sections here, and ask you about this. This is the publication from that '64 conference; is that fair?

A That's right.

Q So this is an article called, Occupational and Nonoccupational Exposures to Asbestos, W.C. Hueper.

Now, my first question is you mentioned that there were some cases that had been reported in the past of people who, perhaps, washed clothes and got sick from asbestos. Would that be a nonoccupational exposure to asbestos?

A Yes.

Q Okay. And can nonoccupational exposures to asbestos result in high exposures to asbestos, even if they're not in the workplace?

A Occasionally, yes.

Q Okay. So I want to ask you a little bit about this. So he says, Since 1935, an increasing amount of epidemiologic, clinical, and pathologic evidence, moreover, incriminates this health hazard as one of the environmental sources of cancers of the lung. And, more recently, also, of mesothelioma of the pleura and peritoneum. Although some commercially interested parties, and their medical guardians, and protectors still prefer, for their own reasons and motives, to deny the existence of these dangerous and usually fatal sequelae.

Now, what does "sequelae" mean?

A Consequences.

Q Okay. Consequences. Of a respiratory contact with asbestos dust. The obvious fallacy of such allegations is well demonstrated by the remarkable and progressive rise in the number of cases of asbestosis and of cancers of the lung, pleura, and peritoneum reported from various countries during the past two decades.

So let me ask you about that. This is '64. And is -- asbestosis, lung cancer, and mesothelioma, are those latent diseases?

A Yes.
Q Meaning they take some time to develop?
A Yes. Many years.
Q Okay. So what does it tell you that they're seeing these diseases in the '50s and '60s about when the exposures occurred?
A So if they're seeing diseases in 1964 that they're writing about, that means somebody was getting exposed to asbestos back in 1944, or 1934, or 1924. And this evil flower is only now blossoming in 1964.
Q Okay. He says, Since the different -- since, of the different types of asbestos, chrysotile represents approximately 95 percent of the total asbestos produced, contact with this type of asbestos furnishes the chief cause of asbestos, pneumoconiosis.
What is that?
A Dust disease of the lungs.
Q And cancer in most countries, and especially in the USA, which mainly produces imports and processes and use chrysotile.
And is that consistent with your opinion about the percentage of chrysotile used?
A Yes, sir.
Q Okay. Contact with other types of asbestos, particularly amosite and crocidolite, is of comparatively

minor and regional importance for occupational reasons. Because these varieties of asbestos are mainly mined in South Africa, and preferably consumed in Great Britain and represent only a relatively small fraction of the total amount of asbestos produced in the U.S.

Now, let me ask you this. Mr. Seay worked around insulation; is that fair?

A Yes.

Q Now, do you have an opinion as to what types of asbestos was in that insulation?

A I do.

Q Okay. What is that?

A Well, they're different types of insulation. But just to get to the bottom line, that would have entailed exposures to chrysotile asbestos and to amosite asbestos.

Q Generally speaking, asbestos insulation, the half moons, the rounds that went around the pipes and the block type of insulation, generally speaking, was that, typically, a mixture of chrysotile and amosite?

A Yes. Some of it had chrysotile only. Some of it had amosite only. And some of it had chrysotile and amosite in the same -- in the same product.

Q All right. And since I'm talking about his exposure, I may be jumping around a little bit. But did you review the testimony of Ronnie Thompson?

A I did.
Q Okay. And we've heard part of his deposition today. But did he give some information as to the type of gaskets that they were using and what types of asbestos those contained?
A Yes, he did.
Q Okay. What was that information?
A Well, the gaskets that he testified to, some of them were chrysotile and some of them were crocidolite.
Q All right. So crocidolite would be that -- the blue asbestos?
A The blue asbestos, yes.
Q All right. Again, 1964. Asbestosis and asbestos cancer hazards related to an inhalatory exposure to asbestos exist not only for asbestos workers proper engaged in the direct and regular production, processing, handling, and using of asbestos-containing materials, but, also, for the large number of individuals who may sustain such contacts on an incidental basis. Such persons may be employed permanently or temporarily in or near operations where asbestos and asbestos products are produced or handled, and where they inhale, therefore, air polluted with asbestos dust.

And he lists some examples, Repairmen, maintenance men, engineers, mechanics, laboratory technicians, office

workers, medical personnel, truckers, railroad workers, yardmen, construction workers, shipyard workers, automobile plant, garage employees, et cetera.

Now, you had mentioned, sir, that there was a concern for people -- when you were doing interviews and learning about asbestos, there was a concern for people working with it, and then people who were nearby to those people?

A Yes.

Q Correct?

A Yes. That's right.

Q And is this the concept he's describing here?

A I think not quite, actually.

Q Okay.

A I think he's talking here about people who, actually, themselves work with asbestos, but they don't do it -- they don't do it 40 hours a week. They do it here and there.

So, for instance, let's just take, by way of example, a laboratory technician, or let's say a railroad worker. The railroad worker one day might be working in a manner that causes them to be breathing asbestos, and that might not happen again for a week. Where -- so very irregular patterns of usage or short-term patterns of usage. And he's making the distinction between that and some of the research articles from earlier years, which were

concentrated on people, let's say, for instance, in the -- in the textile factories, where they were being exposed to asbestos every minute of every working day. And what he's -- what they're saying now is the evidence is showing us it's not just that. It's, also, these -- all these people who were working occasionally with asbestos.

Q Okay. And then he -- he has a table here where he says, Operations and products with contact to asbestos for producers, processors, users, consumers, and residents. And he lists dozens of different products; correct?

A Yes.

Q But he does list insulation blocks, insulation jackets, pipe coverings; correct?

A Yes.

Q Did Mr. Seay have exposure to those types of products at Celanese?

A Yes, he did.

Q And then gaskets, pump packings, and so forth. Did he have exposure to asbestos from gaskets and pump packings?

A Yes, he did.

Q Then as we get through the '60s, did the information we were learning about asbestos continue to grow?

A Yes, it did.

Q Does it continue to grow to today?

A Yes, more and more.
Q Okay. Now, even though we continue to learn more and more about it, let me ask you this. Is it just as true today as it was in the 1960s that asbestos can cause mesothelioma?
A Yes.
Q Is it just as true today that asbestos can cause asbestosis and lung cancer, and is a preventable disease?
A Yes.
Q I want to ask you about one more thing. When does -- you said OSHA came out '71?
A Correct.
Q And what was it that OSHA -- first of all, what is OSHA?
A So OSHA is a federal agency. It was created by an act of Congress which was passed in 1970. But then they had to hire people, and rent an office building, and furnish it, and get people in it. So the actual agency came into existence in about 1971.

And when they went into business, their job -- according to the act of Congress, their job was to figure out rules and regulations to keep the workplace safe, and to promulgate those rules and regulations, and, also, to inspect in the workplaces, and to -- and they were given the power to levy fines if there were violations of the

rules and regs.

But when they came into existence, they had potentially thousands of hazardous situations or substances that they were supposed to make rules about. It Could be electrical shock. It could be my guy with the jackhammer. It could be any number of things. It Could be the coal mines. Now -- I'm sorry, not the coal mines, because that had a separate agency. But it could be the shipyards.

So what they -- they decided that the very first one they would issue rules and regs about was asbestos. Because they saw a very big hazard, a very big impact on human health. So the very first rule they made was about asbestos.

Q Let me ask you this question. Prior -- based on everything you've reviewed and what you've gone through with the ladies and gentlemen of the jury, prior to OSHA, was asbestos just a nuisance dust?

A I'm sorry?

Q Was asbestos regarded as just a nuisance dust, just an everyday dust?

A No, not at all. Not unless you consider mesothelioma just a nuisance.

Q Okay. So if someone from -- from a historical perspective, looking back, if someone said, before OSHA,

asbestos was just a nuisance dust; is that correct?
A No. I don't agree with that.
Q Okay. Let me show you -- this is from -- first of all, what's the ACGIH?
A You're getting alphabet soup here.
American Conference of Industrial -- of -- American Conference of Governmental Industrial Hygienists, ACGIH.
Q Now, you talked about that threshold --
A Can I just say one more --
Q Oh, yeah.
A Just very simply, it's the professional association of people in the field of industrial hygiene.
Q All right. And generally, what's industrial hygiene?
A Okay. Industrial hygiene is a -- is a profession. People in it are engineers. They get trained as engineers.
And they are people who are trained to be able to go into a factory, spot and identify hazards, all kinds of hazards. It could be an electrical shock hazard. It could be a hazard where they don't have a proper procedure to make sure that somebody doesn't start up a machine while somebody else is inside cleaning the machine. It could be dust hazards, all kinds of hazards.
They're trained to identify those. They're trained, as engineers, to design the equipment or to modify the

equipment so it will be safe. They're, also, trained to take air measurements of toxic substances to see how much of a toxic substance is in the air.

So that's the area of training of an industrial hygienist.

Q Now, in your training and in your board certification for preventive -- preventive medicine and occupational medicine, did you have to study and learn those same types of principles?

A Yes. We had to be trained in industrial hygiene, Not everything in industrial hygiene. I'm not going to go in and design equipment. But most of the other things I mentioned, we were trained in.

Q And would that be things like identifying potential exposures from different substances?

A Correct.

Q Including asbestos?

A Yes.

Q Okay. So American Conference of Governmental -- Governmental Industrial Hygienists, you brought up earlier this guideline that they started to deal with in the 1930s; right?

A Yes.

Q Was that guideline adopted by that conference, the ACGIH?

A Yes. The five million particles in a cubic foot of air, I testified, was adopted by many states. It was, also, adopted in -- I think the year was 1946 by this professional group, the ACGIH, where they said -- they looked at the scientific evidence. And they said, yes, air levels of asbestos need to be kept below this five million particles per cubic foot.

And there you have their full name projected on the screen.

Q Okay. So that's their conference in 1946. And I just wanted to put this up there. So there we see that mppcf. That's the million particles per cubic foot threshold that they set?

A Yes. For various substances which are listed here.

Q Okay. And is asbestos listed?

A Asbestos is listed.

Q And they have a threshold for asbestos of what?

A Five million particles per cubic foot, meaning keep it below five.

Q Okay. Now, they, also, have one for nuisance dust, do they not?

A Yes. About halfway down the page, they do have one for nuisance dust.

Q And would it be fair to say the threshold that they set for just general nuisance dust was 10 times higher

than the one they set for asbestos?
A That's right. They are saying you can go 10 times higher in the amount of dust that's in the air if it's just nuisance dust. But if it's asbestos, it's got to be 10 times lower.
Q And then let's just look at their publication. This is again the ACGIH for 1966. Can you see that at the top of the paper -- the page?
A Yes.
Q Copyright American Conference of Governmental Industrial Hygienists. And they, actually, have a section on inert or nuisance particles. A number of dusts or particulates that occur in the working environment that ordinarily produce no specific effects upon prolonged inhalation. And they give some examples.
But is that generally your understanding of nuisance particles?
A Yes. The dust generally doesn't -- it may be an annoyance. It might be a nuisance. But it doesn't destroy your health.
Q Although, at the end of the paragraph, they say, It is desirable to control the concentrations of such particles -- and they're talking about soluble substances -- in the air breathed by any individual in keeping with good industrial hygiene practice.

Do you agree with that, that you should try to keep dust down even if it's a nuisance dust?

A Yes, of course.

Q Okay.

A I mean, it can't be good for you.

Q Right. And again, here, 20 years later, six years before -- or five years before OSHA, they still have the same threshold for asbestos; is that fair?

A They do, yes.

Q And nuisance particles, 10 times higher; right?

A Yes.

Q So does that support your opinion --

A The nuisance is the one at the bottom -- yes.

Q Right.

A At the bottom, it says, inert or nuisance particulates, yes.

Q I'm sorry to interrupt you.

A I'm sorry. I was just catching up with you.

Q Okay. Sorry.

Does that support your opinion that asbestos was not regarded as a nuisance dust prior to OSHA?

A Yes, it does.

Q In addition to all the literature we already went through; right?

A Yes.

Q So --

MR. PANATIER: When would Your Honor like to take a break? Now would be a fine time, or I can keep going, whatever.

THE COURT: Yeah. We can go ahead and take a short break. We'll take about a 10-minute break.

Don't talk about the case. Continue to keep an open mind.

If you would, ladies and gentlemen, select someone to be the Foreperson of the jury. And write their name down and give it to the bailiff while you're on your break, too, please.

Thank you.

(WHEREUPON, the jury was excused from open court at approximately 11:05 a.m.)

THE COURT: All right. We'll take about a 10-minute break.

(WHEREUPON, a break was taken.)

THE COURT: Anything before we bring the jury back in?

(WHEREUPON, there was no response.)

THE COURT: Okay. Yes, ma'am.

(WHEREUPON, the jury came into open court at approximately 11:22 a.m.)

THE BAILIFF: They have selected a Foreman --

Foreperson. It's Matthew Mason.

THE COURT: All right. Mr. Mason, you'll just be the point of contact between the Court and the jury. If anybody needs to communicate with me from the jury, I can only communicate out here on the record, or by way of a written note that's made part of the record. So keep that in mind if anybody has to contact me. It's usually rare if you do have to contact me, but that's the protocol if you do.

And you'll kind of preside over the deliberations.

All right. Thank you, sir.

JUROR #130, MATTHEW MASON: Thank you.

THE BAILIFF: I have another situation. Your Honor, one of the young men here feels it's a conflict of interest in him on this --

THE COURT: Okay. Wait a minute.

All right. Let me just ask everybody to go out of the courtroom, except you, sir.

(WHEREUPON, the jury was excused from open court at approximately 11:25 a.m., with the exception of Juror #16, Yevgeniy Bondarchuk, who remained in the courtroom.)

THE COURT: Yes, sir. Now, remind me of your name again?

JUROR #16, YEVGENIY BONDARCHUK: Just call me Eugene

Bondarchuk --

THE COURT: What's your juror number?

JUROR #16, YEVGENIY BONDARCHUK: #16.

THE COURT: Okay. Go head.

JUROR #16, YEVGENIY BONDARCHUK: Okay. I -- like I told you before, I'm working at the Auriga plant, which is -- used to be owned by Hoechst Celanese. And it happened to be I find out in trial, that it's the very same plant that Dennis worked at.

And then I'm doing very same job he does, working on the stretch lines. He's talking about staple A, which is -- was moved. And then he said, in 1975, he moved to staple B, which is -- [inaudible] stretch lines working for -- I'm working on those lines on a daily basis -- [inaudible] -- balers. So I don't know how it is going to be.

THE COURT: All right. As I understand it from what you said to me earlier -- who owns that plant now?

JUROR #16, YEVGENIY BONDARCHUK: Auriga Polymers, which is Indorama Ventures. It's kind of a big corporation, 12,000 people. But Auriga is the name of this local plant.

THE COURT: And your exact title there or job position is what?

JUROR #16, YEVGENIY BONDARCHUK: Maintenance

operator.

THE COURT: I can't hear you.

JUROR #16, YEVGENIY BONDARCHUK: Maintenance operator, MO.

THE COURT: Okay.

JUROR #16, YEVGENIY BONDARCHUK: Well, my main duties is troubleshooting the equipment. And when I have to, I run some of the machinery. When somebody calls in sick or something, I fill in for that. But mainly I work in the -- fixing stuff.

THE COURT: All right. And you feel like -- that your job experience that you have, after hearing the testimony of Mr. Seay and Mr. Thompson, creates a problem for you in what specific way, sir?

JUROR #16, YEVGENIY BONDARCHUK: I don't know. I just -- it's hard to say if it's -- if it's going to impact my judgment or not. It's hard to say. I don't know. I mean, I'm just hearing, you know, something that is very close to my life.

So it's kind of -- I don't know. And I work with a lot of people that used to work for Hoechst Celanese. They're still there.

THE COURT: Well, is there something specific you think that is -- as we -- as it stands right now that would affect your ability to be impartial?

JUROR #16, YEVGENIY BONDARCHUK: Not really, no. Nothing that I can say.

THE COURT: There's nothing you've heard during the trial that changes your belief when you took that oath that you can decide the case based on the evidence and the law?

JUROR #16, YEVGENIY BONDARCHUK: No. I don't think so.

THE COURT: So you're bringing it up now why?

JUROR #16, YEVGENIY BONDARCHUK: Well, because I find out that this case is -- it's exactly about the plant. Before, you were asking just -- the Celanese.

THE COURT: Right.

JUROR #16, YEVGENIY BONDARCHUK: And from what I knew, Celanese owned several plants around here, if I don't mistake. But when I heard that they said -- they showed picture in presentation. Then they said it's the -- borderline with the Pacolet River and talking about -- [inaudible] and exactly what that is.

THE COURT: So you knew exactly --

JUROR #16, YEVGENIY BONDARCHUK: So I just -- I just wanted to let you know so it wouldn't be a problem in the future. You know what I mean.

I don't want to go through the trial and then somebody finds out that this is what I do. And it's going

to be conflict of interest, or something.

THE COURT: Have you discussed it with any of the other jurors?

JUROR #16, YEVGENIY BONDARCHUK: Yes. I -- they asked me where I worked. And I told them that I worked at this plant now. So that's all we discussed.

THE COURT: Okay.

JUROR #16, YEVGENIY BONDARCHUK: And I asked to talk to you about it yesterday, but I guess it didn't get through.

THE COURT: This is the first I've heard of it.

So, first of all, thank you for your candor.

Second, if I understand what you're telling me, you don't know of any reason, as it stands right now, why you would be biased or prejudiced towards or against any party in this case, or about any issue in this case.

And you believe you can still be fair and impartial. You just were taken aback, for lack of a better term, that this case involved a gentleman who was working in, basically, the same job you have now at the same place; is that right?

JUROR #16, YEVGENIY BONDARCHUK: Yes, sir.

THE COURT: Okay. Thank you.

I'm going to ask you just to step right outside one second.

JUROR #16, YEVGENIY BONDARCHUK: Okay.

THE COURT: Thank you.

(WHEREUPON, Juror #16, Yevgeniy Bondarchuk, exited the courtroom.)

THE COURT: Okay. Does any party wish to state anything for the record in regards to what we just heard?

MR. TIVIN: Your Honor, this is Mark Tivin on behalf of John Crane.

Obviously, I need a little bit of time to digest what just occurred in a case where we are going to be potentially taking the position that the Plaintiff didn't do some of the things that he testified that he did. And this man has the same job at the same place.

I -- If I had known that before, I may have made different decisions when we were selecting the jury, or I may have asked if there would have been inquiries from you to allow us to make an informed decision.

I don't want to make a snap judgment right now off the top of my head saying that I -- but the fact that he's told the other jurors that he worked at that plant is very troubling to me in that, now, it's going to be -- someone is going to ask him a question, and he's going to be like, I've been instructed not to talk to you about my job, which puts a poor taste -- makes -- it makes what's happening out here seem suspicious in there.

But I can't make a snap decision right now. I -- this is something where I have to talk to my client about what they wish to do. But I don't think we should interrupt the proceeding. We can go through to lunch and just say, you know, let's keep your mouth shut and don't say anything until lunch.

And then -- and I can come up with a more considered position at that time, rather than take any huge break now and...

MR. YOUNG: Judge, could we just all agree that whatever motion we might make, if any, or anything, does not waive if we -- you know, motion to excuse a juror or whatever is not waived if we just keep going. So we can talk to our -- I need to talk to our -- my client about it, too.

This has never happened to me before, Judge. I always make decisions based upon what I did in the same or similar circumstance before. But if it has happened, I don't remember it.

THE COURT: Okay.

MR. TIVIN: Unless you want to break for lunch. I have -- another suggestion is it's 11:30. We could break for lunch now.

MR. PANATIER: We can still get a lot done before lunch.

THE COURT: Yeah. I think so.

Anything from the Plaintiff?

MR. PANATIER: I -- I have no objection to stipulating that there's no waiver of an objection if the Defendants want to talk to their clients first, and maybe come back after lunch and address it then.

I -- my -- just my gut reaction is not that he expressed any bias one way or another here. But that there's a potential wild card factor if -- if, when they get into deliberations, they're like, you worked there. What happens? How is it laid out?

Those types of -- those types of issues -- and he may not be able to divorce himself from them. So that's just my candid sort of take right now. So I don't have any problem with holding off for a little bit. But it is a wild card issue, clearly.

MR. YOUNG: And, Judge, it's -- you know, in the overall scheme of things, the fact that he's already told them that he worked there, I mean, that could be a -- wrong. I mean, I guess --

MR. TIVIN: That could be a game-changer --

MR. YOUNG: Yeah. I mean, that's what I'm worried about.

MR. PANATIER: Well, he said in open court he worked there. And it was clear he worked at the same place. I

think the concern is he's like, I have the same job as this guy." So that's the -- that's the issue. They already knew he worked there.

MR. TIVIN: Well, they knew he worked for something, but they didn't know he worked at the same plant.

MR. PANATIER: Yes, yes, they did. He said he worked at the same plant in voir dire.

MR. YOUNG: Judge, I didn't mean to start a big debate.

THE COURT: That's okay. I don't -- I'm not that concerned about -- I'm sure they probably don't have anything else to talk about. So they're probably talking about where they're working.

So -- but I don't -- it doesn't appear to me there's been any kind of premature deliberation. He said the conversation was limited to that particular question and answer, as I understood it, so.

But I think it's certainly reasonable and fair to allow everybody to have time to kind of process this information, and consult with your clients, and do whatever research you might need to do. But it doesn't appear to me to be an issue about concealment. He didn't conceal anything intentionally or unintentionally.

But the analysis is simply still whether either side's right to an impartial jury has been compromised.

So we can revisit it after y'all have had time to digest it.

MR. PANATIER: All right. I'll get my witness back out from the hallway.

MR. TIVIN: Before we bring them in, can we just tell him not to talk --

THE COURT: Yeah. That's what I'm going to do right now.

All right. Yes, ma'am.

(WHEREUPON, the jury came into open court at approximately 11:36 a.m.)

THE COURT: I just need that one juror back. I'm sorry.

THE BAILIFF: Oh, I'm sorry, Your Honor.

(WHEREUPON, the jury was excused from open court at approximately 11:36 a.m.)

(WHEREUPON, Juror #16, Yevgeniy Bondarchuk, entered the courtroom.)

THE COURT: Yes, sir.

Thank you again for disclosing that.

JUROR #16, YEVGENIY BONDARCHUK: Okay. No problem.

THE COURT: And you're going to stay on the jury for right now. But just make sure, like I've said throughout the case, don't talk about the case or anything related to it with anyone, even your fellow jurors at this time. It

wouldn't be appropriate, obviously.

And I don't -- I don't have any reason to believe that that's happened, other than what you told me here today, that they asked you where you worked. But don't mention what we've discussed out here to your fellow jurors and -- or about your job, or anything else such as that. Okay.

JUROR #16, YEVGENIY BONDARCHUK: Okay. May I ask a couple questions? You said so for right now. That means what?

THE COURT: It means what I said.

JUROR #16, YEVGENIY BONDARCHUK: It could be further disqualification, or, I mean --

THE COURT: Well, I mean, I think if things stay as they are, then I have to give everyone time to kind of process what you told -- what you told us without delaying the trial.

JUROR #16, YEVGENIY BONDARCHUK: Okay. Second question is, can -- if we go in deliberation -- when we go in deliberation, can I use my experience, what I saw in my decision, or talk about it with the other ones? Or how -- it's going to be hard for me to say no because --

THE COURT: Well, I understand that. And I think that's probably part of the thinking that everybody's doing at this point. So we don't need to get into that

right now.

JUROR #16, YEVGENIY BONDARCHUK: Okay.

THE COURT: Okay. But if, before we make the decision about what we should do with this information you've given us, you have some further thoughts about your ability to be fair and impartial, you do need to let me know about that.

JUROR #16, YEVGENIY BONDARCHUK: Okay.

THE COURT: Does that -- do you understand what I'm saying?

JUROR #16, YEVGENIY BONDARCHUK: Yes, sir.

THE COURT: Okay. Thank you again, sir.

JUROR #16, YEVGENIY BONDARCHUK: Okay. No problem.

THE COURT: You can bring the rest of the jury on in.

(WHEREUPON, the jury came into open court at approximately 11:39 a.m.)

THE COURT: Yes, sir. Mr. Panatier.

MR. PANATIER: Thank you, Your Honor.

CONTINUED DIRECT EXAMINATION

BY MR. PANATIER:

Q All right. Dr. Holstein, we'll go a little bit longer before lunchtime.

Talking about OSHA a little bit, you said it was -- the first substance they addressed was asbestos. Did they publish some standard that addressed that as a law?

A Yes. They published what they called an emergency standard for asbestos.

Q Okay. And what types of things did they say about asbestos? What regulation did they pass?

A Well, they, first of all -- the main thing they passed was a regulation saying the level at which you have to keep the air concentration of asbestos below for workplaces. But they, also, had some regulations that had to do with giving caution labels and warnings.

And, also, very shortly thereafter, they, also, had rules and regulations about doing medical examinations of such people, doing dust measurements, and a whole series of additional regulations.

Q Did they have things like showers, lockers, things like that?

A They required showers and changing areas so that people would not bring dust home on their clothes to their families.

Q Okay. Now, the one thing I want to talk to you about is -- first of all, is you said they established some levels of asbestos exposure. Now, we heard about this one from the ACGIH of five million particles per cubic foot. Did that change when OSHA passed their law?

A Yes, it did.

Q What did they set as -- whatever you want to call

it -- a limit?

A Well, they started using -- they specified a different technique for measuring how much asbestos is in the air. And because they used a different instrument with different techniques, the air concentration was expressed differently.

Q How did they express it?

A They expressed it, at first, as a limit of 12 fibers per cc. That was the temporary emergency standard, the one that they could do as quickly as possible.

Q I'm sorry. That was in '71?

A Yes.

Q 12 fibers per cc. What's a "cc"?

A Okay. A cc is a cubic centimeter of air. And a cubic centimeter of air is about a small thimbleful. Or you used to see those little white sugar cubes in restaurants. These days they usually have packets. But if you remember those little white sugar cubes in the restaurants, those would be about one cubic centimeter or one cc.

So what they're now measuring is not just any old dust particle, but one that -- ones that look like fibers, in other words, long and thin, Not round, not oblong, not clumps, but long and thin fibers.

And what they're saying is that in this thimbleful of

air, you can have no more than 12 fibers of -- of -- presumably of asbestos to be seen.

Q And this was the '71 emergency standard?

A Yes, quickly replaced.

Q Okay. And you say "quickly replaced." When was it replaced?

A Next year, 1972.

Q Did they make the limit -- by the way, what are these called, the limits?

A Well, sometimes it's called a PEL for peak exposure limit. Sometimes, it's called TLV for threshold limit value.

Q Okay. What about --

A And generally, in medicine, if you can make something more complicated, instead of simpler, and use more words instead of fewer, we like to do that.

Q Okay. What about permissible exposure level? Is that a term they've used?

A Yes.

Q Okay. So in '72, you said it changed almost immediately. What did it change to?

A Five fibers per cc.

Q And then just to cover the time in this case, so through about 1980 that Mr. Seay was at Celanese doing this work, did it change again during the '70s?

A 1976, it changed again.
Q What did it change to in '76?
A Two fibers per cc.
Q So within a period of about five years, they lowered it by a factor of six. It was six times lower in '76 than it was in '71; fair?
A Six times less asbestos dust allowed in the air, yes.
Q Did they, also, set any requirements for ceiling exposures, or exposures -- temporary exposures that would be very high?
A Yes. Because without getting into too much detail, the numbers you're already seeing is the permissible exposure limit averaged over the whole day. Since the amount of asbestos in most workplaces tends to go up and down, depending on what's going on.

But, in addition to that, they said, even for short periods of time, you can't go over 10 fibers per cc, even if it's just brief.

Q Okay. So these numbers here would be what OSHA is saying is for a whole workday, you can't have an average that is greater than these numbers; is that fair?
A That's correct.
Q And then you just said, they said for short term, you can't have one that's higher than 10 fibers?
A Correct. Even if it's brief. We're going to put a

ceiling on it, 10 fibers per cc. You're never going to exceed that.

Q Okay. So is it fair to say these were both OSHA requirements, an all-day requirement and a short-term requirement?

A Correct.

Q Okay. And then we'll get a little bit into labeling. But do they have labels required for things like wastes, products, substances that contained asbestos, and so forth?

A Yes. If it contained asbestos, you had to put a caution label on it.

Q And was the labeling requirement for OSHA the same in '71 or '72 as it was into the early '80s?

A Yes.

Q Okay. We may come back and talk a little bit more about that. But I want to spend some time talking about these levels of asbestos here, these permissible exposure limits.

First of all, were the permissible exposure limits ever designed to protect all workers?

A No.

Q Okay. Were they ever designed to prevent all cancer?

A No.

Q What were they designed to do?

A So they were designed, specifically, to prevent asbestosis, scarring of the lungs. And they explicitly said, this is not a protective measure -- I'm sorry. This will not protect adequately against developing cancers. It will only protect against developing scarring of the lungs.

And they said, furthermore, that this -- even for asbestosis, even for scarring of the lungs, it will prevent the majority -- large majority of cases from occurring if a person would be exposed under these rules, in which the rules were adhered to, for an entire working lifetime of 40 years.

So -- but even then, there would be some cases of asbestosis. But it would get rid of most of the cases.

Q And would it be fair to say -- and if I go too far, you know, afield, if I ask you something that is not in your area of expertise, let me know.

But would it be fair to say, from your understanding, that the OSHA standard applied to employers like Mr. Seay's employer?

A For the most part, it applied to employers. They're the ones who had to follow these rules.

Q And did it apply to Celanese as an employer?

A Yes.

Q Did it apply to John Crane as a product manufacturer?

A For their employees, yes.
Q Okay. And what about for their products?
A For their products, too.
Q Okay. Let's talk a little bit about these limits. Okay. Because I want to make sure we have an understanding of this.

Now, let's take the standard starting in '72. It's a nice round number of five. So that's 1972, five fibers per cubic centimeter, the little sugar cube. Okay. Now, what method did OSHA say to use as a microscope when you, actually, looked at the samples that were taken?
A Something called phase contrast microscopy, or PCM.
Q PCM. Is that -- Here's all I want to know. Is that a light microscope like a biology class microscope, or is that an electron microscope?
A That's like a biology class microscope. It's going to sit on top of a desk. And it's not -- it's not like an electron microscope, which requires its own room.
Q In fairness, electron microscopes were and still are very expensive?
A Correct.
Q Does a light microscope see all of the asbestos that is present in a sample?
A No. It's not powerful enough to see them all. It will miss many of -- in fact, it will miss the majority of

the asbestos fibers.

Q So when you're looking at the standard -- and let's say you have a sample, hypothetically, and you're looking at it with this light microscope, this basic microscope, and you see five fibers. Is it a fact that there are many more present?

A Yes.

MR. TIVIN: Objection. Speculation.

MR. YOUNG: Join.

THE COURT: Overruled.

THE WITNESS: There will be many more present. This has been tested and measured by subjecting the same sample to looking at it under the ordinary light microscope, and taking the same sample and looking at it with an electron microscope, which can see more. And what you find is that there are many more fibers that you can see with the electron microscope in the same sample than what you can see with the desktop light microscope.

BY MR. PANATIER:

Q Okay. So the second thing is, when you look at a sample, did OSHA say which particles that you saw you were supposed to count as fibers?

A Yes.

Q Okay. Which ones were you supposed to count?

A Anything that was long and thin and which -- and

which was longer than five microns in length.
Q Okay. So if the fiber is longer than five microns in length, you count it. And then did they, also, have something that was called an aspect ratio?
A Yes. That's the long and thin part.
Q Okay. And what does that mean?
A It Had to be, at least, three times as long as it was thin -- as it was wide.
Q All right. So to put this in very simple terms. We learned what a micron was yesterday, a millionth of a meter; right?
A Yes.
Q So if ou were looking at an asbestos sample, you had to count -- you could only count things that were, at least, five microns long or longer; is that fair?
A Correct.
Q And were, at least, three times as long as they were wide?
A Correct.
Q So, hopefully, I would be a fiber. Am I three times as long as I am wide?
A Unless you put your arms out.
Q All right. So you're looking for things that look like a fiber, look like that; fair?
A Yes.

Q All right. Now, we, also, heard a concept from Dr. Brody yesterday called background or asbestos that is in the ambient air. Is it true, from an occupational medicine perspective, that there is some asbestos in our general breathing air?

A Yes, there is.

Q Okay. And let me just ask you right now. Is there any -- any evidence that that level of asbestos can cause by itself mesothelioma?

A Well, it's plausible to think that it might cause an occasional case, rarely. That's a reasonable thing to believe. But we are -- for technical reasons, there is no -- there has been no way to prove that, or disprove it.

So we -- since we don't have the evidence of it, if I have a patient and they have mesothelioma and the only exposure that they have had is to the ordinary air that we all breathe, if that's the only exposure to asbestos that they've had, I don't -- I consider them to be a person whose mesothelioma is of unknown cause.

Q Okay. For someone who has occupational exposure to asbestos that develops mesothelioma, are you able to attribute that cause?

A Yes.

MR. TIVIN: Objection. Vague.

THE COURT: Overruled.

THE WITNESS: Yes. If they have a history of exposure to asbestos in their work, of course, details will matter, but, by and large, the answer is yes.

BY MR. PANATIER:

Q Okay. So let's talk a little bit about that background level. Do you have an opinion -- is it true that certainly across the country, there are different levels of background asbestos? Just the general small amount of asbestos that may be in the air, from place to place it varies?

A Yes, of course.

Q Do you have an opinion on what that average is in the States, just for purposes of discussion?

A I'll tell you what it was back in the '70s.

Q Okay.

A Because it's lower now. But back in the '70s, a median air concentration of asbestos would have been 0.00005 fibers per cc.

Q Okay. Four zeros and a 5?

A Yes.

Q Dr. Brody said, put a one there. Is that a reasonable estimate?

A I -- at that level of measurement, the difference between one and five is almost negligible.

Q Okay. We're talking about tens, hundreds,

thousands -- am I right about that? Tens, hundreds, thousands, ten thousands, hundred thousands?

A Good luck on that.

Q Am I correct about that?

A It's five hundred-thousandths of a fiber.

Q All right. So if we -- so this is per the sugar cube --

A Correct.

Q -- Right?

So the amount of asbestos in the background on average, as you're taking from the '70s here, was 5/100,000 -- so 5/100,000 of a fiber per sugar cube; is that fair.

A That's fair.

Q And would it be the same thing to say that for every 500,000 sugar cubes, you would expect to find one fiber?

A Five.

Q You would -- I'm sorry. You would expect to find five.

A Yes.

Q All right. So let's do this. Let's say that you have, hypothetically, an occupational exposure of one fiber per cc. So one fiber in the sugar cube. And like we showed here, OSHA had different limits. In 1972, it was five. Let's just say you have one. Okay. Someone is

doing something, and there's one fiber per cubic centimeter.

Is there a way to figure out -- and I have a calculator on my phone if we need it -- how much higher is just one fiber per cubic centimeter than that background number?

A I think it's 10,000 times, but I'd rather get a calculator to be sure.

Q I'm going to use a calculator. Okay. I've got it on my phone here. Okay. Would we divide this number into this number?

A Yes.

Q Okay. So I'm going to take one divided by .00005, and I get 20,000.

A 20,000. Because --

Q Okay.

A Correct.

Q So if you have one fiber, you would be 20,000 times over that general background number; is that fair?

A Correct.

Q Okay. So from an occupational standpoint, and for the types of work that Mr. Seay did, did Mr. Seay do work that would have exposed him to asbestos far in excess of background?

A On many occasions, yes --

MR. TIVIN: Objection to the foundation.

THE COURT: Overruled.

BY MR. PANATIER:

Q All right.

A On many occasions, yes.

Q And did he have that type of work history for -- in fairness, his social security records say '71 to '80. He recalled late '60s to late '70s. But about -- would you say about anywhere from about eight to 10 years; is that fair?

A Yes.

Q Okay. Would you characterize his work that he did with machinery, packing, gaskets, insulation as regular work?

A Yes, I would. He did it -- that's what he was doing every day.

Q Was it frequent?

A It was, also, frequent --

MR. TIVIN: Objection to the characterization.

MR. YOUNG: Join.

THE COURT: Well, rephrase it.

BY MR. PANATIER:

Q Okay. How would you characterize his work with asbestos-containing products, Dr. Holstein?

A Well, in the first place, it was an ordinary and

usual part of his work. It was something he was expected to do. And he was expected to do it frequently as -- in the normal course of his duties. It wasn't unusual. It wasn't just occasional. It was something that he had to do routinely. And, therefore, it occurred on a regular basis.

It, also, occurred on a frequent basis, being daily. And many times, it would be several times a day that he would be exposed to asbestos, either through his own work or through the work of others.

And I would, also, say that the air concentrations of asbestos to which he was exposed indicated that he was close to the work. There was proximity.

In many cases when it was work with his own hands, it -- the proximity was arm's length. And on other occasions, when it was a result of the work of other people, it might be three feet, or five feet, or 20 feet. But in any case, he was in proximity to the -- to the source of asbestos.

So that would be a rough characterization of his work with asbestos.

MR. TIVIN: Objection. Move to strike.

May I approach?

THE COURT: Okay. Sure.

(WHEREUPON, a bench conference was held.)

BY MR. PANATIER:

Q The next question, sir, is, from reading his testimony, your understanding of the literature, was his -- his work, as you've characterized it -- was his work with -- with and around insulation a substantial factor in developing his mesothelioma?

A Yes.

Q Was his work with and around gaskets a substantial factor in his developing mesothelioma?

A Yes.

Q And, specifically, did he identify several different brands of gaskets?

A Yes, he did.

Q Okay. And you have your file there. If you need to reference it, please do. But he identified -- is it fair to say he identified Garlock?

A He did.

Q I think -- well, you tell me. I'm not going to give you the testimony. You tell me. What other brands did he --

A I recall that he identified Garlock. He identified Armstrong. He identified John Crane. He identified Anchor. Those are the ones I recall from his testimony.

Q All right. And in fairness, he said there might have been some others; is that fair?

A Yes.
Q Okay. From the testimony of he and Mr. Thompson, were you able to determine whether or not his exposure to each of the gaskets, including John Crane, would have been a substantial factor in the development of his mesothelioma?
A Yes.
Q And what is your opinion?
A I think the answer is, yes. They were substantial factors in causing his mesothelioma.
Q Okay. Let me ask you about a general question. Causation. Okay. You said that you had training in epidemiology; is that right?
A I did.
Q And certainly you're a medical doctor; fair?
A Yes.
Q Okay. And so as a medical doctor, as an occupational doctor, and in -- someone in preventive medicine, is assessing a substance's ability to cause a disease something that you have done throughout your whole career?
A Yes. That's right at the core of my field. I mean, constantly in the field of occupational medicine, you're seeing people who have some -- some complaint or another.
It might be breathing. It might be their arms and legs. It might be their liver. And your job is to figure

out, has this been caused by what's going -- what they've experienced in their work. So figuring out causation is right at the center of my field.

Q So let me ask you -- and I'll try to -- I'll try to just sum this up in a few questions.

So, first of all, from your -- in your role as an occupational medicine doctor, do you have an opinion as to whether or not the different types of asbestos we've discussed -- chrysotile, amosite, crocidolite, actinolite, and tremolite -- can cause the disease mesothelioma in human beings?

A I do.

Q What's your opinion?

A That each of those varieties of asbestos can cause malignant mesothelioma, and does cause malignant mesothelioma in human beings.

Q Now, I'd like to ask you, what is the basis for that opinion, for causation, the ability of each of those fiber types to cause mesothelioma? Can you give us a thumbnail sketch on the type of information you've included in your opinion?

A Sure.

Q Okay.

A Starting with chrysotile asbestos, which is the one for which this issue is most often addressed.

Q Okay.

A There are many different kinds of information that all lead to the same conclusion that chrysotile asbestos causes mesothelioma. So we'll start at the lowest level of life. And we'll look at what happens within individual living cells when asbestos penetrates those cells or comes into contact with those cells. And I would imagine Dr. Brody probably testified about that.

Q He did. He testified a lot about that.

What would you characterize that area as of science?

A Perhaps, I would call it carcinogenesis. In other words, the process within the cell by which a previously normal cell becomes a cancerous cell. And then that cancerous cell then begins to divide into more and more cells. And they're, also, cancerous.

Q What else have you considered on the issue of causation?

A So the next thing would be to look at a -- at an entire tissue that is living. In other words, what I just talked about was just one cell. But the experiments in particular that I'm thinking of is you can, actually, take part of the windpipe out of a hamster, using anesthesia. And you can, actually, keep it alive in the laboratory.

And, again, you can expose asbestos to that windpipe of the hamster. And the cells there will, also, begin to

show changes that are of the type that are the beginning -- the first stages of growth of a cancer.

Q Would that be -- would you call that animal studies?

A I just call it tissue studies.

Q Okay. Tissue studies. What else?

A So the next one would be an intact living animal, the entire hamster. Or rats are often used in laboratories for experiments of this sort.

And if you expose laboratory animals to chrysotile asbestos, they will develop mesotheliomas. They will develop cancers of the pleura and other cancers as well, particularly lung.

And then you can take the next step up and look at a human being. And we have -- at an individual human being. And we have lots of case reports -- innumerable case reports of individual human beings exposed only to chrysotile asbestos getting mesothelioma.

And then, lastly, we have epidemiologic studies, which are populations or groups of hundreds or thousands of people exposed only to chrysotile asbestos, and developing elevated rates of mesothelioma in those groups.

So, at least, going from the smallest and simplest level of life to whole populations of life, we see the same story. And it's a uniform story. And in my view, it's conclusive.

Q And have you, also, considered the finding of different scientific bodies, agglomerations or conglomerations of scientists, and regulatory bodies, and their conclusions?

A Yes.

Q So I'll just write, scientific and regulatory. Is that okay?

A Certainly.

Q And I'm just going to rattle off some names. I'm not going to take us through all the documentation. We can go through some of it.

But is it -- is it fair to say that OSHA, NIOSH -- NIOSH is the National Institute for Occupational Safety and Health?

A Correct.

Q And who are they?

A Well, that's another federal agency. It's different from OSHA, even though the name is similar. And it has a slightly different job to do -- well, not just slightly different, quite a bit different job. But it still has to do with safety and health in the workplace.

Q Are they the research arm?

A They do research, and education, and training.

Q Okay. OSHA; NIOSH; IARC, which is the International Agency for Research on Cancer; W-H-O, World Health

Organization; the EPA, the Environmental Protection Agency; the Consumer Product Safety Commission; the National Cancer Institute. Sir, is it fair that all of those different bodies, whether they are scientific or regulatory, have concluded that all forms of asbestos cause mesothelioma?

A Yes.

Q And have they, also, concluded that there is no known safe level of asbestos exposure?

A Yes, sir, they have.

Q Okay. And do you agree with that?

A I do.

Q What I want to do is I want to ask you about some literature. We're not going to sit here and read all this. I just want to as, you -- some, I'm going to ask you just about the titles and whether you've considered it. Some, I may ask you about an excerpt from it. Okay.

A Very good.

Q So the first one is -- there's a paper called, Mesothelioma from Chrysotile Asbestos and Update, by Marty S. Kanarek. Have you read that?

A Yes.

Q Do you find it to be authoritative and reliable?

A I do. And I would just say that means that it's useful. It -- the -- it demonstrates knowledge of the

field. But it doesn't mean that I necessarily agree with every sentence in it.

Q In fact, you -- there are probably sentences in every article you've ever read that you don't agree with; is that fair?

A Absolutely. And as much as we revere this book right here, if you looked at it in detail, you would find things in it that you might disagree with.

Q Okay. Fair.

And that is -- that may vary from person to person. This may vary from expert to expert; fair?

A Correct.

Q Okay. The next one, Chrysotile Asbestos is the Main Cause of Pleural Mesothelioma. I'll just put that up there. By Allan Smith and Catherine Wright. Have you read that?

A Yes.

Q Do you find it to be authoritative and reliable?

A I do.

Q Okay. Chrysotile Asbestos as a Cause of Mesothelioma: Application of the Hill Causation Model, by Dr. Lemen. Have you read that before?

A I have, yes.

Q Do you find that to be authoritative and reliable?

A Yes.

Q And in fairness, Dr. Lemen has done some testifying on the plaintiff side in asbestos litigation; fair?
A Yes, he has.
Q I did want to ask you. Today, you're here at my request. You're being paid to be here as a consultant expert. That's something that you do a lot of now; right?
A At this -- I'm a month short of 72. And at this point in my life, I do a lot of it.
Q Okay. And have you, also, consulted for companies on asbestos issues?
A Yes, I have.
Q Okay.
A Including companies that had asbestos products.
Q Right. Not just companies that might have an asbestos issue by virtue of having it in their facility, but, actually, companies that made it?
A Yes.
Q Here's one from -- I think this one is from this year. Yeah. This is by Steven Markowitz, 2015, Asbestos-Related Lung Cancer and Malignant Mesothelioma of the Pleura: Selected Current Issues. Have you read and reviewed that?
A Yes, I have.
Q Do you find that generally to be authoritative and reliable?

A Yes, in the same sense.
Q This one by Dr. Egilman, who, also, has consulted on both sides in litigation; correct?
A Yes, he has.
Q Okay. Exposing the 'Myth' of ABC, 'Anything But Chrysotile': A Critique of the Canadian Asbestos Mining Industry and McGill University Chrysotile Studies. Have you read and reviewed that?
A Yes, I have.
Q Do you generally find that to be authoritative and reliable?
A I do.
Q Okay. Have you heard of the Helsinki Consensus Report or the Helsinki Criteria?
A I have.
Q It first came out in -- about when?
A Around 1999, or something. I don't remember the exact date.
Q They've reissued their findings. This is a consensus report, Asbestos, Asbestosis, and Cancer, the Helsinki Criteria for Diagnosis and Attribution, 2014. You've read and reviewed this; correct?
A Yeah. This is the update in 2014. And now that you have it in front of me, the original date was 1997.
Q Okay. Here's a World Health Organization

publication. This is from 2006, Elimination of Asbestos-Related Diseases. Have you read and reviewed this?

A I have.

Q Okay. And I just want to ask you about a few sections on this one. That paragraph.

Exposure to asbestos causes a range of diseases, such as lung cancer, mesothelioma, and asbestosis (fibrosis of the lungs), as well as pleural plaques, thickening, and effusions. There's, also, evidence that it causes laryngeal and possibly some other cancers.

Generally, do you agree with that, sir?

A I do.

Q And then, down at the bottom, it says, All types of asbestos cause cancer in humans. Asbestos (actinolite, amosite, anthophyllite, chrysotile, crocidolite, and tremolite) has been classified by the International Agency for Research on Cancer as being carcinogenic to humans. Exposure to chrysotile, amosite, and anthophyllite asbestos and to mixtures containing crocidolite result in an increased risk of lung cancer. Mesotheliomas have been observed after occupational exposure to crocidolite, amosite, tremolite, and chrysotile, as well as among the general population living in the neighborhood of asbestos factories and mines, and in people living with asbestos

workers.

Do you agree with that?

A I do.

Q And do you agree with this last sentence that I'll ask you here, No threshold has been identified for the carcinogenic risk of chrysotile?

A I do.

Q Meaning what?

A That means -- the word -- the keyword there is "threshold." And the other -- yes, the keyword there is "threshold."

The threshold is an air concentration or an exposure, the amount of exposure to asbestos. And what they're saying there is that nobody has been able to find an exposure so low that if you -- if lots of people were exposed to that, that somebody would not get the mesothelioma.

Q And that's the -- is that the same concept that we addressed here with OSHA setting these permissible exposure limits, that they were not designed to be protective against cancer?

A That's correct.

Q Have you read the National Cancer Institute fact sheet on asbestos exposure and cancer risk?

A Yes, I have.

Q Okay. Here, I think they're talking about folks who worked on cars, but I want to kind of focus on the second part of the sentence. Studies evaluating the cancer risk experienced by automobile mechanics exposed to asbestos through brake repair are limited. But the overall evidence suggests there is no safe level of asbestos exposure. Is this the same concept just now from the National Cancer Institute?

A Same concept.

Q Are you familiar and have you read the position statement on asbestos from the Joint Policy Committee of the Societies of Epidemiology from 2012?

A Yes, I have.

Q Now, do you find that to be authoritative and reliable?

A Yes, in the same sense as the others.

Q Okay. And do you agree with their position that all fibers can cause mesothelioma?

A I do.

Q Okay.

A All the different types of fibers.

Q Right. The different types that we've discussed.

A And just to be clear, the different types of asbestos fibers.

Q Yes. Different types of asbestos fibers.

Okay. So here's -- here's where we are. Let's talk about the ability of insulation and gaskets to release asbestos. Is that something you're prepared to do?

A Sure.

Q And is that one of those things that you've studied the literature on, and you have continued to stay current on that?

A Yes. I've studied the literature on that. I've studied the industrial hygiene literature. The Port Allegany Asbestos Health Program is about a factory where they made one of the pipe coverings. I have a lot of experience with what you just asked about.

MR. PANATIER: Your Honor, I can keep going, or this is a breaking -- a natural breaking spot, too.

THE COURT: Yeah. Just keep going.

MR. PANATIER: Okay.

MR. TIVIN: Your Honor, may we approach?

THE COURT: Sure.

(WHEREUPON, a bench conference was held.)

THE COURT: We'll just go ahead and break for lunch.

Ladies and gentlemen, just come back at 1:30. And we'll resume.

Don't talk about the case. Don't do any outside investigation. Continue to keep an open mind.

Thank you.

(WHEREUPON, the jury was excused from open court at approximately 12:18 p.m.)

THE COURT: Okay. Let me back up a couple steps. Because we've had -- I think that was our third bench conference. And while I appreciate everyone's willingness to not disrupt the trial and we'd have to take the jury out, I don't want to prevent anybody from fully putting on -- their objections on the record and protecting the record.

So I think, Mr. Young, you were the first one that, actually, had a matter to be taken up at the bench. And if you want to summarize what occurred, I'll let you do that now, sir.

MR. YOUNG: I think Ms. Shofner is going to --

THE COURT: She was up here, too. All parties were represented.

But go ahead, Ms. Shofner.

MS. SHOFNER: I believe it was a renewal of our objection to allowing documents to come in as to Celanese as a premise owner. And that that is not our duty to -- that we should have known or gone out and kept abreast of all of the asbestos literature of hazards of asbestos.

THE COURT: Okay.

MS. SHOFNER: And then we had, I think, a continuing objection to all the documents that were -- that he --

that Mr. Holstein was talking about regarding the knowledge and state of the art of asbestos history.

MR. YOUNG: Judge, our position -- and it was in our motion -- is that we're not held to the same standard as a product manufacturer, which is the standard of an expert. And that for those to be admissible, there needs to be some evidence of actual knowledge by Celanese of the documents, as opposed to what I guess is, you know, becoming constructive knowledge.

And so we had asked that Your Honor give a limiting instruction to the jury that those articles about the knowledge of asbestos hazards and the state of the art not be considered against Celanese for those reasons.

And as I understand it, Your Honor overruled our objection and declined to give a limiting instruction, but did give us a continuing objection to Dr. Holstein's testimony with respect to those articles.

So we would renew that objection and our request for a limiting instruction.

THE COURT: All right. Sir, does that fairly summarize the objection in the conference from the Plaintiffs standpoint as well?

MR. PANATIER: It does. It summarizes it.

THE COURT: And does John Crane have no issue in this or --

MR. TIVIN: No. We have no position.

THE COURT: Okay. Well, obviously, later on, if a limiting instruction is necessary, I will be glad to consider it. But at this juncture, I did overrule the objection and declined to give a limiting instruction.

The second matter was John Crane. And that was not the most recent matter, but there was something right before that that you objected to.

MR. PANATIER: You did object to something. I don't remember what it was.

MR. TIVIN: I imagine it was just foundation or expertise. But I believe my objection was in open court on the record. I don't recall having an argument.

MR. YOUNG: It's just sad that none of us can remember something that happened 30 minutes ago.

(Pause.)

MR. TIVIN: All the objections I made were in open court. And I don't need to expound on anything further.

THE COURT: Okay. That's fine.

Then the one we just took up was John Crane's objection, which I'll let Mr. Tivin articulate.

MR. TIVIN: May it please the Court.

Mark Tivin on behalf of John Crane.

At this point, John Crane is requesting a limiting instruction in anticipation of testimony it believes is

going to be elicited from Dr. Holstein regarding fiber release from various gasket activities.

Although those gasket activities were testified to by Mr. Seay, specifically, regarding removing gaskets, removing them with a grinder, with a scraper, and with a wire brush, there has been no foundation and there is no foundation that shows that any of the gaskets that he ever removed were John Crane gaskets.

The only testimony in this case is that John Crane was a number -- one of a number of manufacturers. There were 350 people in his department doing his job. There is no testimony that he ever worked on the same thing twice. There is no testimony that he was able to recognize the gasket upon removal. There is no testimony that there was any specific application or piece of equipment that required John Crane gaskets.

So to allow the speculation that some of the gaskets that he removed were John Crane is in effect -- there's no foundation for it. And it puts me in a position of having to prove that they weren't John Crane, impermissibly shifting the burden, when we've heard numerous Plaintiffs experts talk about how it's 10,000 times above background, how it's 20,000 times above background.

And then he puts up a number that says that this is, I believe -- I anticipate it being about 20 fibers per cc

for grinding, when there's no foundation that any of those gaskets that he ground were John Crane, is unduly prejudicial to John Crane. And the jury needs to know, at the time the testimony is elicited -- at the time the testimony is being elicited that this isn't being used against John Crane. Because any limiting instruction that occurs later, the damage is already done. Because they're talking about gaskets. They're talking about John Crane. And then they're saying, you get 20 fibers per cc on removing gaskets in some circumstances when there's absolutely no foundation.

And it is pure, rank speculation to say that any of the -- because of the number of inferences that need to be jumped through, before you could get to Mr. Seay removing a John Crane gasket. You're allowed to have a reasonable inference. But this is the inference that he worked on the same piece of equipment or someone else put a John Crane -- someone that he doesn't know put a John Crane gasket in, at some point in time, and that he's the next one to work on it.

And that if he did work -- and because you can't identify the gaskets when you remove them, that the gasket that no one can identify is one of these ones that John Crane worked on -- that was a John Crane installation, there's -- you need to lay a basic foundation. And it

hasn't been done.

And this Court, specifically, struck the question. The fact that the question was stricken, it can't be used as a basis for a foundation -- that can't be used as a basis for a foundation for testimony.

Thank you, Your Honor.

MR. PANATIER: May I be heard, Your Honor?

THE COURT: Yes, sir. Mr. Panatier.

MR. PANATIER: Yeah. Just because -- you know, just because a lot of large numbers are stated, actually, doesn't -- doesn't make it any less likely he used a John Crane product. In fact, the fact that you had 350 people using four brands of gaskets is a fact issue that the jury can consider as to whether or not he would have, over a 10-year period, pulled off John Crane gaskets.

And, in fact, he testified that he removed gaskets on almost a daily basis. This was something that was ongoing over a 10-year period with four brands of gaskets. So it's a fact issue. There's not rank speculation here.

And then, lastly, I would just say that the one question and answer that you sustained their objection to from the deposition was, On those occasions that you worked on a pump or a valve more than one time, would it, also, be fair to say that you would be removing or replacing asbestos gaskets that you yourself had

previously installed?

He said, Yes.

It didn't get played here. But an expert can rely on that. It need not be admissible for an expert to rely on it. In other words -- and that's right in the rules. That's right in 702, 703, that an expert can rely on evidence that need not be admissible in court to render his conclusions.

So when I ask him, I can say, Sir, to a reasonable degree of certainty, over a 10-year period with four brands of gaskets and 350 people installing and removing these gaskets over and over during that time, is it -- do you believe it is more likely than not that he worked with a John Crane gasket both installing and removing?

If the witness says, yes, based on what he read and his assessment, I think that's a fact issue. And I think that the witness can testify to that. It's certainly not shifting of burden to John Crane. It's just my evidence. It is circumstantial. That's fine. There is now -- there is no eyewitness, yes, I pulled a John Crane gasket out. It's circumstantial. It's not direct, but it is evidence. And it is a fact issue the jury can consider.

And I'm sure in closing, he'll say there's no eyewitness that said he pulled out a John Crane gasket. At the same time, I'll say the evidence is there were four

brands that were being pulled out over a 10-year period over, and over, and over again.

MR. TIVIN: Briefly -- if I may briefly respond, Your Honor?

THE COURT: Sure.

MR. TIVIN: An expert is allowed -- an expert is not allowed to rely on evidence that's been stricken by this Court. I believe that we can all agree on that.

MR. PANATIER: I don't agree to that. I don't think that's a rule.

MR. TIVIN: Because if an expert can rely on evidence that's been stricken by this Court, then there's no foundation -- then there's no reason for any witnesses. It doesn't matter what any of your rulings are regarding striking testimony if the witness can just get up there and rely on it, and then spit it out to the jury what you've already said is not admissible, and is not to be before the jury.

THE COURT: Well, that may be --

MR. TIVIN: That's number one.

Number two, this -- and I'm sorry for interrupting, Your Honor.

THE COURT: That's okay. Go ahead.

MR. TIVIN: And number two, it's more than -- you look at the testimony regarding the speculative nature of

what they're trying to do. Mr. Thompson is going to -- Mr. Thompson testified yesterday that only 25 percent of the gaskets needed to be scraped or power wire-brushed. And 75 percent of them fell off.

This isn't a question where every gasket needed to be ground off. And if that was the question, that every gasket needed to be ground off, I believe that Mr. Panatier would have a point in that there is some circumstantial evidence that he would have worked on the same thing.

But, now, it's more than that. It's -- of the 25 percent that needed to be scraped or ground off, there's no evidence about what percentage of them needed to be ground off. There's no evidence about which ones of those were John Crane. There's no evidence about which -- it's one thing to allow a reasonable inference.

But, in here, there is no reasonable inference. Because he wants you to take the leap that he removed a bunch of gaskets. But then he wants you to use that grinder removal number and place that before the jury when there is absolutely zero evidence that that had anything to do with John Crane.

And I want to be sure that I'm clear to the Court. I am not saying that the grinder evidence doesn't come in. Because it does come in because he testified to it.

However, it's extremely prejudicial when you hear the testimony that's come out through the Plaintiffs experts about how it's 10,000, 20,000 times above background. And then you throw this number and then -- without telling the jury, this number -- there's no evidence that this number can apply to John Crane, the prejudice is overwhelming.

THE COURT: I understand the objection. I overrule it on the ground that it does appear to be -- the Plaintiffs proof includes circumstantial evidence.

And the arguments that John Crane is making now may very well be good arguments to the jury in the closing. But as far as arguments in favor of excluding evidence or warranting a limiting instruction, I don't find them persuasive.

I find that there is evidence in the record already, through Mr. Seay and Mr. Thompson, about the types of gaskets that were in the plant, the type of work Mr. Seay did. And this is sufficient to support a foundation for this testimony of Dr. Holstein.

So I overrule the objection. There's no basis for a limiting instruction. Even if I gave such an instruction, in the form that's been proposed, it would be a comment on the facts, which I can't do without violating the Constitution.

So we'll be back at 1:30.

All right. Thank you.

MR. TIVIN: Thank you, Your Honor.

THE COURT: And as far as the issue about the reliance by the expert on stricken testimony, I believe Mr. Panatier has a point that the rules do, specifically, allow for the experts to rely on documents that may not be admissible.

If the goal here is to search for truth, there's nothing preventing the expert from going out and asking the same question that was found to be objectionable under the rules of evidence to a witness. And, therefore, the expert can then rely on that in forming his opinion if it's of the type of evidence he reasonably relies on in forming opinions.

So while I understand the logical construct Mr. Tivin very finely brought, I disagree with it.

Thank you.

(WHEREUPON, a lunch break was taken.)

THE COURT: Anything else before we bring the jury in?

MR. TIVIN: Yes, Your Honor.

THE COURT: Yes, sir.

MR. TIVIN: Mark -- are you ready?

THE COURT: Yes, sir.

MR. TIVIN: Two things. One, Your Honor inquired as

to me as to what other issue I had on sidebar, and I couldn't remember what the objection was. I remember what the objection was, just for the record.

I objected to Dr. Holstein making an opinion on the alternate issue of frequency, regularity, and proximity. And I stated the basis at the sidebar. And I understand that Your Honor denied that objection and allowed him to testify.

MR. YOUNG: And we had joined in that, Your Honor.

THE COURT: Well, that refreshes my memory as well. And that is accurate, as far as I can recall.

But I do deny that based on Rule 704. I don't think he's telling the jury what result to reach. And I believe such testimony would be admissible under the rules, so.

MR. TIVIN: Secondly --

THE COURT: Yes, sir.

MR. TIVIN: -- Your Honor, if I may continue. At this time, John Crane would make a motion for a mistrial based on the issue with the juror.

THE COURT: Okay.

MR. TIVIN: We believe that because this juror has -- not only works at the same plant, but has the same job as the Plaintiff, there was -- I'm not saying that he -- it was actively concealed in any way, shape, or form, but it has come to our attention. And that is something that we

would have asked Your Honor to inquire of, and most probably used -- if you had known that he had the same job at the same plant, we would have asked you to further inquire. We would have used our jury strikes differently had we known of this information.

Secondly, he's said that he has told the other jurors where he worked. And it's the same -- and it's my understanding he told them that he worked at the same plant. And, now, because he's told the other jurors there and now he's going to be -- he's going to say, I've been forbidden to talk about what I do for a living, it creates a prejudice in the jury room that I don't think can be fixed.

And it's my -- my notes say that he said he was worried. Now, I don't know if he said he was worried about his job, or if he was worried about something else. Because I know on his juror questionnaire, he said that he was not -- he was exposed to asbestos, but not worried about its health effects. And, now, he's listened to two witnesses come in here and say that a man with the exact same job at the exact same place has died.

I don't -- I don't know what he was referencing. But I think the fact that -- this is something that we would have gone into and used a peremptory. And we believe that, based on the fact that he's had conversations with

other jurors that mentioned where he worked and now he's been to be instructed not to talk, we feel that we are going to be denied an impartial jury. And because we believe we're going to be denied an impartial juror, we don't believe it can be remedied by any way other than a mistrial.

MR. YOUNG: And we would join in the motion for a mistrial, Your Honor, Celanese.

THE COURT: All right.

MR. PANATIER: So the first thing, Your Honor, is I'm looking at the morning session transcript from September 29th, 2015, where on page 70, Mr. Bondarchuk, B-O-N-D-A-R-C-H-U-K, #16, said, "I'm working for Auriga Polymers. That used to be called Celanese. I know some people that worked for Hoechst Celanese.

And then later, he was sworn again. And Your Honor -- there were a couple follow-up questions that you were asked to ask him. #16. Okay. Same juror. This is again -- this is on Page 127.

Good afternoon. A couple questions from your questionnaire. All right. First of all, you said you worked with Celanese?

Answer: No. The Auriga Polymers plant where I work now used to be Hoechst Celanese.

You were never employed by them?

No.

Do you have any opinions about it?

No.

Et cetera.

He made it very clear that he had worked at the Hoechst Celanese plant. So everybody already knows that. The fact that he told any jurors that he worked there, they already heard him because he said in open court two times.

So I don't think there's any grounds for mistrial on that. So we would oppose Defendants request for mistrial.

As far as the juror remaining on the panel, to the extent that he has expressed that he has issues as to whether or not he would be able to keep his personal knowledge separate from what he learns in trial and the fact that he works there doing the same job as Mr. Seay, I think he should be excused. And we'll put in an alternate. I think that avoids any issues with him.

The only thing the juries heard is that he works there. And he already said he did.

MR. TIVIN: If I could briefly respond, Your Honor.

When the juror came out this afternoon -- and I think everyone in Spartanburg knows there was more than one Celanese plant around here. He said that he didn't realize it was the same Celanese plant until he heard the

testimony about -- I can't pronounce the name of the river. But there was some river that was mentioned. And that's how he knew it was the same plant.

It was some description that was given by the -- but, once again, for the reasons that we previously stated, we don't believe there's any way to cure this. And we believe that this -- unfortunately, this panel has been tainted. And...

THE COURT: All right. There's no evidence of any taint to the panel or premature deliberations. As I already stated, I -- he said that the exchange was limited, specifically, to where he had worked, which had already been disclosed.

And to the extent he worked at the Celanese plant or a plant that had once been a Celanese plant, he indicated there was no further discussion about it.

He, obviously, is very conscientious. And he did express concern about his continuing ability to confine his decision to the record, given the fact that he would know details about the setting. And he could place trial evidence in context that an ordinary juror unfamiliar with the work environment there would have no way of doing.

So I think from that standpoint, it puts him in a position where he is already worried about that, and mindful of the instructions I've already given and will

give again about confining his decision to the evidence. He's expressing some doubt that he can comply with that without some type of brain surgery, basically.

So I think he should be excused. I don't find this to be an issue of concealment. As I stated before, there's nothing he was asked during voir dire that he has not disclosed. Even if there were, there were -- it was some unintentional concealment, I don't find there was any prejudice to any party by his failure to volunteer that he worked at a specific plant. He didn't know what plant was at issue in this case. He had no way of knowing that. He wasn't asked about a specific plant.

So there's nothing showing he is a potential and material source of bias, except to the extent that he has personal knowledge of the precise work setting that is at issue in this case.

So even though I don't find that he is biased or anything but impartial, I am going to excuse him and insert the alternate just to avoid that potential problem.

And as to the mistrial request, mistrial is supposed to be granted only when absolutely necessary as a last resort and --

Yes, sir.

MR. YOUNG: I'm sorry, Judge. I got a -- I'm old and my back hurts.

THE COURT: And, therefore, they're only to be granted when there's no other choice and to present -- prevent manifest injustice. I certainly don't find any of that would be occurring in this trial. It was not granted.

So that's my ruling.

Yes, sir, Mr. Young.

MR. YOUNG: Your Honor, I just -- that wasn't exactly how I thought this was going to end up.

So I would ask that Your Honor -- just so we can be sure about Your Honor's ruling that before the juror's excused that we inquire of him exactly what he said to the other jurors about his work at the plant. That wasn't fleshed out at all this morning.

And I think it's a different motion, Judge, if he told them about work out there. Because that's, you know, evidence that didn't come from the witnesses in the case.

So I think that's an important issue that we would request that Your Honor, at least, inquire about before he's excused.

THE COURT: Well, I'll ask him about -- I'd be willing to ask him to just confirm that he has not disclosed anything to the jury about his work environment, other than what he's already told us.

Does that cover it?

MR. YOUNG: That said it better than I did probably, Judge.

THE COURT: Well, I don't know about that.

MR. YOUNG: Right, Mark?

MR. TIVIN: Yeah.

THE COURT: Okay. So anything further before we bring Mr. Eugene out?

THE BAILIFF: Bring him only?

THE COURT: #16.

(WHEREUPON, Juror #16, Yevgeniy Bondarchuk, entered courtroom.)

THE COURT: Okay. Sir, you mentioned that the conversation you had with the other jurors was where you worked.

JUROR #16, YEVGENIY BONDARCHUK: Yes.

THE COURT: Was anything else discussed?

JUROR #16, YEVGENIY BONDARCHUK: Well, they just asked me where I work. I said, Well, I work -- I happen to be at this plant where -- what we talked about. That's about it.

THE COURT: That was the extent of the discussion?

JUROR #16, YEVGENIY BONDARCHUK: Yeah, pretty much.

THE COURT: Okay.

JUROR #16, YEVGENIY BONDARCHUK: I mean, let me think about it. Just -- yeah. I think that was it. That's

pretty much what I had told them, where I work, and I work on the same stretch lines -- 14. And I do pretty much same job. That's what I remember. Yeah.

THE COURT: Okay. And you didn't share any other information with the jury about that, other than what you've already told us?

JUROR NUMBER 16: Then one of them asked something about asbestos. But then somebody said, We shouldn't be talking about it so we didn't discuss it.

THE COURT: Okay. Was that the full extent of it?

JUROR #16, YEVGENIY BONDARCHUK: Pretty much, yeah.

THE COURT: Nothing else was discussed?

JUROR #16, YEVGENIY BONDARCHUK: From what I remember, no.

THE COURT: All right.

JUROR #16, YEVGENIY BONDARCHUK: Oh, the other thing, second time I came back, you mentioned not to talk about what was discussed. And the first time when I went in the room, they asked what happened. And I didn't tell them everything. But I pretty much I was asked why and all that.

THE COURT: I'm sorry. Repeat that, sir.

JUROR #16, YEVGENIY BONDARCHUK: The First time when I went here, you told me to go back. I went back. And they all asked what happened. And I didn't tell them

everything. I just said that he asked me question if it's going to affect my judgment, and all that. And that's pretty much it. That was it.

THE COURT: Okay. Anything else?

JUROR #16, YEVGENIY BONDARCHUK: No.

THE COURT: All right. Well, I'm going to go ahead and excuse you from the trial, just because of the unique circumstances.

JUROR #16, YEVGENIY BONDARCHUK: Okay.

THE COURT: So do you need to go back in the jury room?

JUROR #16, YEVGENIY BONDARCHUK: Yes, to get my stuff.

THE COURT: Okay.

JUROR #16, YEVGENIY BONDARCHUK: Or somebody can bring it.

THE COURT: If somebody will get it, yeah. So you just don't need to have any other contact with the jurors.

JUROR #16, YEVGENIY BONDARCHUK: Okay.

THE COURT: But thank you for your service.

JUROR #16, YEVGENIY BONDARCHUK: Yes, sir.

THE COURT: And we do have alternates.

JUROR #16, YEVGENIY BONDARCHUK: Sure.

THE COURT: So, again, I thank you for your conscientiousness.

(WHEREUPON, Juror #16, Yevgeniy Bondarchuk, exited the courtroom.)

THE COURT: Is any bailiff in here still?

MR. PANATIER: I think she's getting his stuff.

(Pause.)

THE COURT: All right. Just -- if you'll just ask him just to stay right outside the door one minute before we let you go altogether.

THE BAILIFF: Yes, sir.

(Pause.)

THE COURT: All right. Yes, sir.

MR. TIVIN: Your Honor, Mark Tivin on behalf of John Crane.

At this point, based upon the information that was given by the juror, we would renew our motion for a mistrial. He clearly said that they asked him what happened. And then he said he couldn't tell them. That puts -- somehow puts it in a bad light.

And, more importantly, from what I heard, they said they asked him if there was asbestos out there. And he put in his jury questionnaire that he had already been exposed to asbestos there.

And if they're asking -- that shows that -- based upon this, that they're already ignoring the Court's admonition not to discuss the case. And they're beginning

to prejudge the case before the Plaintiffs have even rested, if they're starting -- asking factual questions and seeking information that Your Honor has, specifically, told them that they should not be doing.

And because of the reasons that I stated in my original mistrial motion, as well as the statements that were made to Your Honor in the voir dire, we would renew our motion for a mistrial.

Thank you.

MR. YOUNG: And, Judge, I don't have anything to add, though that is troubling that they were asking questions that were clearly outside the evidence in the case. And that was kind of what I was worried about before.

So I just feel like that there is grounds for a mistrial now. And we would renew our request.

MR. PANATIER: May I respond?

THE COURT: Yes.

MR. PANATIER: Chris Panatier for the Plaintiffs.

If he had, actually, provided them with some information outside the record, then, perhaps, this might be something to entertain if it wasn't cured by an instruction. But he didn't. They asked him a question, and he didn't answer it.

The only one he did answer was, What happened?

And he said, The Judge told me -- asked me if I could

be fair. So -- and set aside my work. And that was it.

So I -- I certainly have no objection if the Court is inclined to give an instruction to -- you know, to continue refraining from discussing the case. But they haven't received any outside-the-record information whatsoever.

MR. TIVIN: Briefly. So as we sit here right now, all we know is that they asked him if there was asbestos -- from the jury's perspective, they asked him if there was asbestos in the plant. And the next thing you know, we send him home.

MR. YOUNG: Well -- and, Judge, I mean, that's not really the issue. I want to try the case as much as anybody. But you've told them, at least, six times now not to discuss the case, to keep an open mind. And the fact that they asked the question at all shows that they clearly disregarded your instruction.

I mean, it -- that's a pretty big deal for a defendant for a bunch of jurors to ask some guy who worked at the exact place, was there asbestos out there, whether they got an answer or not.

So I don't think Mr. Panatier's description of the issue is really what we're concerned about.

THE COURT: Well, it's always interesting to try to interpret the inscrutable workings of jurors. But it

appears to me, from what I heard, that one person asked a question. And then another person said, We're not supposed to discuss the case, which means, at least, one person has been listening to what I said.

And, of course, they're all presumed to be following my instructions. And, evidently, they have been because they didn't have a discussion. One person asked the question. There's no information that was conveyed to me.

It seems that there's no ground for a mistrial. There's no evidence of premature deliberation. There may be evidence of an improper question asked. But if that were the ground for a mistrial, then there probably wouldn't be many cases that ever reached a verdict.

So I just don't see any prejudice, any -- anything that could limit either side's right to a fair trial in this case, based on this juror's interactions, or his status, or his knowledge, and his presence on the jury up to this point.

So I respectfully deny the motions.

And I appreciate your arguments in support of them. But I just don't find there's a problem.

So he can leave. And we'll resume the testimony.

You can bring the jury on in.

Thank you.

(WHEREUPON, the jury came into open court at approximately 2:01 p.m.)

THE COURT: Yes, sir. Mr. Panatier.

MR. PANATIER: Thank you, Your Honor.

CONTINUED DIRECT EXAMINATION

BY MR. PANATIER:

Q All right. Dr. Holstein, I have one last area to talk about with you. And it's just your conclusions about the ability of insulation and gaskets to release asbestos fibers into the air based on the literature.

Let's start with insulation. First of all, I think I've asked you this fundamentally, but just to kind of signpost it. Did you find that -- or conclude that Mr. Seay had been around insulation both personally and as a bystander from other workers?

A Yes, I did.

Q And did you find that he breathed in on a regular basis over that decade, or so?

A Yes, sir, I did.

Q All right. So let's talk about insulation in terms of the concentration of asbestos that can be released from that.

First of all, is it always the same amount of asbestos that comes out of a product?

A No, highly variable, particularly with insulation.

It depends on what you're doing with it at that moment.

Q Okay. So it might be fair to say that if someone was violently ripping off a piece of insulation, it might be a little bit different than if they took the same piece and gently pulled it off a pipe?

A Correct.

Q Or someone who was sawing it, as opposed to hammering it; is that fair?

A Correct.

Q Okay.

A Or they're tearing it off literally hundreds to thousands of pounds on a huge boiler versus they're removing one foot from a pipe.

Q Okay. Well, what types of activities did Mr. Seay and Mr. Thompson describe that they would have to do out there across the board with regard to insulation?

A Well, they would frequently remove it from -- from pumps and valves so that they could carry out their repairs on pumps and valves. And sometimes, they'd have to cut some type of insulation back from the flanges.

A flange, I think you probably already know, is where two pipes come together and join. But that might only involve cutting back a few inches of insulation to get to the flange.

They would -- they were not insulators. So it was

not mainly their job to insulate materials. But sometimes, they would do a small job of insulation.

Q And at the same time, did you see in the testimony where Mr. Seay said they would be around the insulating crew?

A Yes.

Q And would that be in a circumstance where they would be called like a bystander?

A Correct.

Q So I'm going to, also, put "bystander" on here.

And this isn't every scenario, is it, Doctor?

A No. There are other scenarios, too.

Q Okay. From the literature you've reviewed and from your study of this issue, can you give us a range of what the potential exposures are, from the low end to the high end, for removing, cutting, and bystander exposure to insulation?

A Well, surprisingly enough, some of the activities -- some of the times when insulators are working, the air concentrations may be less than one fiber per cc. They may go all the way down to a tenth of a fiber per cc. But at the other end, they have been measured up in the hundreds of fibers per cc.

So it's a very broad range, depending on what they're doing at that exact moment. Now, so that's generally the

range.

Q Okay. And would it be fair to say that, all things equal, the further away you get from the operation, the lower the exposure?

A Yes.

Q So how would you characterize his bystander exposure?

A Well, I think the bystander's exposure was an important exposure from a medical point of view. I think that even though he wasn't the one doing the job we're talking about when we talk about bystanders, he was -- because those air concentrations can be so great for the person doing the job, they can be pretty high for the person 20 feet away, too, or even 30 or 40 feet.

Q So would you say it would be in this range as well?

A Yes. But, of course, the whole thing would be shifted a little bit to the left, so to speak. In other words, towards the lower end of the range.

Q So lower end of the range. Would that be fair to say?

A Yes.

Q Would it be fair to say from Mr. Seay's work that Mr. Seay experienced insulation exposures to asbestos anywhere from the low end of .1 fiber cc all the way up to hundreds of fibers per cc's over the period of time that he was at Celanese?

A Yes. Perhaps, low -- you know, perhaps, around a hundred. I wouldn't go up into the many hundreds for a bystander, unless he was right next to the guy.
Q All right. And, of course, another thing that might play a role is whether you're in a confined space, as opposed to an open space; Is that fair?
A That plays a role. It, also, plays a role whether there are fans blowing. It plays a role how big a job it is. There are a lot of factors that play a role. That's why I'm sort of hedging --
Q Yeah.
A -- on this and just speaking generally.
Q And, In fact, there's literature of people like, for instance, working on ships where they're in a very small boiler room smashing out insulation; right?
A Correct.
Q And those levels, you would expect to be way, way, way higher; is that fair?
A Those levels can be extraordinarily high, yes.
Q That's not what he was doing; is that fair?
A Correct.
Q So if you had to say what -- from his activities, what range would you give for the average where his exposure would have fallen from these types of activities?
MR. TIVIN: Objection --

THE WITNESS: I think the long-term average would be --

BY MR. PANATIER:

Q Oh, I'm sorry. I'm sorry. I think there's an objection.

MR. TIVIN: Objection to foundation.

THE COURT: Overruled.

THE WITNESS: So there is -- there is industrial hygiene literature on what the average exposure would look like. And so, for instance, one set of investigators were named Nicholson and Holiday and Heimann. And they said the average exposure to an insulator was about six fibers per cc, the long-term average.

Now, if he's a bystander, I'd cut that back a little bit, make it maybe four fibers per cc as a bystander. And it might not be all the time, the way it would be for an insulator. It might be part of the time.

BY MR. PANATIER:

Q So someone who's an insulator, the literature says, about six fibers. So six of those fibers per sugar cube; fair?

A Yes.

Q And he may have experienced, throughout that time, levels at six fibers per cc; is that fair?

A Undoubtedly, at times. Undoubtedly, higher than six

fibers per cc. But the average would have been most likely lower than that, the long-term average.

Q Okay. And would that have been on a regular basis, as you discussed earlier?

A Regular -- frequent and regular, but intermittent.

Q Okay. And we talk about proximate. When he's doing it himself, he's doing it within arm's reach; fair?

A Yes.

Q Let's talk about gaskets now. Let me ask you -- I'm going to ask you some papers. And then we may talk about a few of them, but briefly. Have you read and do you rely upon this paper: Exposure to Asbestos from Asbestos Gaskets, by Cheng and McDermott?

A Yes.

Q Do you find that to be authoritative and reliable with all the same caveats we've stated?

A Yes.

Q Okay. Evaluation of Airborne Asbestos Fiber Levels During Removal and Installation of Valve Gaskets and Packing.

A Yes.

Q Have you read that?

A Yes, I have.

Q Do you find it to be authoritative and reliable?

A I do.

Q Okay. Fiber Release During the Removal of Asbestos-Containing Gaskets: A Work Practice Simulation, by Longo, Egeland, Hatfield, and Newton.

Have you read that?

A Yes.

Q Do you find it to be authoritative and reliable?

A I do.

Q Now, in fairness, Dr. Longo, you know he has, actually, testified for Plaintiffs in these types of cases?

A I understand that.

Q Okay. But on the other side of the coin, have you read this paper: Airborne Asbestos Exposures Associated with Gasket and Packing Replacement: A Simulation Study of Flange and Valve Repair Work and Assessment of Exposure Variables by Model, et cetera?

A Yes.

Q Okay. And you know, of course, that -- I'll show you here, near the last page. That study was funded by John Crane, the Defendant in this case; right?

A Correct.

MR. TIVIN: Objection. Relevance. It's not anything we're putting into evidence.

MR. PANATIER: It's Part of the literature --

MR. TIVIN: The fact that we may have funded

something, at some point in time, is simply not relevant here.

MR. PANATIER: Your Honor, if I may?

THE COURT: Go ahead.

MR. PANATIER: I'm showing the spectrum of the literature. Some has been done by plaintiffs experts, some by defense experts.

THE COURT: All right. Overruled.

BY MR. PANATIER:

Q So, sir, can you see where this one was funded by John Crane?

A I see that, yes.

Q All right. And that eight of the nine authors are currently employed by Cardno ChemRisk, a consulting firm that provides scientific advice to government, corporations, law firms, and so forth; right?

A Yes.

Q Okay. And Amy Madl, in fact, is a designated expert of John Crane in this case. Okay. I want you to assume that. All right.

A I will.

MR. TIVIN: Objection, Your Honor.

THE COURT: What's your objection?

MR. TIVIN: Sidebar, please.

THE COURT: Okay.

(WHEREUPON, a bench conference was held.)

THE COURT: All right. Ladies and gentlemen, those last two questions are not evidence in this case. You're to disregard the questions and the answers.

And, as I told you, you must confine your decision in this case to the evidence. And that exchange, the last two questions and the answers to them, are not evidence. They should not have been brought out. And, therefore, they won't be part of the record in this case.

Yes, sir. You can continue.

MR. PANATIER: All right. Thank you, Your Honor.

BY MR. PANATIER:

Q Did you read this paper?

A I did.

Q Okay. And does this paper report different findings of the ability of gasket and packing work, and valve work, and so forth to release asbestos?

A Yes, it does.

Q Did you consider it in your evaluation of the overall literature?

A Certainly.

Q Okay. Is it fair to say that -- well, I've got one more. This is a report from MVA, this company right here, MVA Scientific Consultants. You're familiar with them; right?

A I am.
Q Okay. And this is, Fiber Release Testing During Gasket Making, dated May 22nd, 2006. Have you read and relied upon this?
A Yes, I have.
MR. TIVIN: Just objection to relevance. There's no evidence of hand hammering in this case.
THE COURT: All right. Overruled.
BY MR. PANATIER:
Q Very briefly. This was a test of a work practice study where they did some hand hammering and filing of gaskets; right?
A Correct.
Q Okay. And they found fibers per cc over here, 2.2; 2.2; the area, .7; 2.2; 1.5; and the area, 1.0. That's fibers per sugar cube; right?
A Correct.
Q And is this something you've considered in your evaluation of the literature?
A Yes.
Q Okay. Now, this one is a report. It's not published in a journal; right?
A Correct.
Q They, also, analyzed -- this was a study of John Crane gasketing material; correct?

A Yes, it was.
Q Okay. And they analyzed it. And they found that John Crane 2150 was 72 percent chrysotile asbestos and .15 percent tremolite, actinolite; correct?
MR. TIVIN: Objection. Relevance. No evidence that product is in this case.
THE COURT: Overruled.
BY MR. PANATIER:
Q Tremolite, actinolite are that amphiboles type of asbestos; correct?
A That's right.
And the answer to the previous question is yes.
Q Got you.
And to be clear, what types from your notes -- or from your recollection, what model numbers or type numbers of John Crane gaskets were testified about in this case?
A 33 -- I'm sorry -- 333 and 2112.
Q Okay. And what type of asbestos is in 333?
MR. TIVIN: Objection. Foundation.
MR. PANATIER: I can lay a foundation.
THE COURT: Go ahead.
BY MR. PANATIER:
Q Have you looked into what type of asbestos is in 333?
A Yes.
Q And have you considered company documents as well as

corporate representative testimony?
A I have.
Q Okay. And what type of asbestos is in 333?
A Chrysotile asbestos.
Q Okay. And the same question for 2112. Have you relied upon corporate representative testimony, as far as what type of asbestos is in John Crane gasket 2112?
A I have.
Q Okay. What type is in it?
A That's the crocidolite kind, the blue asbestos.
Q All right. And those were numbers, in fairness, that Mr. Thompson recalled; fair?
A That's correct.
Q Okay. So, now, let's talk about the work practices that were done with gaskets. Okay. Similar to what we did with insulation. And then this is my last area, and I'll be all done.

All right. First of all, it's fair that Mr. Seay identified four -- or Mr. Seay and Mr. Thompson together identified about four different brands of gaskets at Celanese; fair?
A Yes.
Q And over how long were they installing and removing gaskets?
A Well, the entire time he was there. And,

undoubtedly, it would have started as soon as they started up that plant, as soon as they began to build that plant.

Q Okay. And have you reached a conclusion to a reasonable degree of certainty as to whether or not Mr. Seay would have, on a regular basis, removed all four of those brands, based on the evidence you've looked at?

MR. TIVIN: Objection. Foundation.

THE COURT: Overruled.

THE WITNESS: Yes. I have reached a conclusion about that.

BY MR. PANATIER:

Q What is it?

A He would have removed all four of those brands. They were being put in by himself, by others. And later on, when repairs needed to be done or preventive maintenance needed to be done, they were being taken out again.

Q Okay. What types of -- first of all, for installation of gaskets -- installation, so new a gasket.

A Okay.

Q What types of operations did they use or what types of work practices did they use to fabricate those gaskets?

A The test -- in general or the testimony in this case?

Q In this case.

A The testimony in this case indicates that they would start with a flat sheet of material -- of gasket material.

And it would be a flat sheet like this, only a little bit thicker. And they would lay it on plywood. And they would take a knife. And they would cut it to the shape that they needed it to be.

And, according to the testimony, somebody would sort of be assigned to do that on a particular day, and would make a bunch of them all at one time. And then they would keep them in stock. And then people would just take them as needed until somebody needed to make more.

Q In fairness, sometimes they didn't have to fabricate one, they would have one precut; right?

A Sometimes they would have ones that were precut, yes.

Q And sometimes they had preformed gaskets from the manufacturers; true?

A That's correct. And I guess part of this conversation is it's important to make a gasket fit correctly. Because its whole purpose is to keep -- where metal is coming up against metal, its purpose is to prevent leakage of whatever is going through that machinery or the pipes, the vessels, the pumps, the valves, et cetera.

So you have to get a good fit. So it has to be shaped correctly to where it's going to be placed.

Q All right. And from the literature you've reviewed, what is the range of exposure you would expect from just

cutting of asbestos-containing gaskets that you believe Mr. Seay would have experienced?

A The brand new gaskets?

Q Yes, sir.

A From a tenth of a fiber or even lower -- in other words, hardly detectable, all the way up to about two fibers per cc.

Q And just for reference, if you have something -- earlier, I asked you if you had something that was in, say, the middle of this range, one fiber per cc, how many times over that background level that would be, that was 20,000 times; is that right?

A That's correct.

Q Okay. Were there any other operations you noted for fabrication?

A Not in this plant as described by the two witnesses.

Q Sometimes, you see folks who hammered them out, but you didn't see that here?

A That's what I usually see -- That's too strong. That's what I often see. And I often, also, see the cutting with a knife.

Q Okay. So let's go to removal of gaskets. Removal. What types of practices were used here to remove gaskets?

A So I don't know if this has been described before. So, now, we're dealing with gaskets that have been in use.

And they're corroded. Because they've been exposed to heat. They've been exposed to pressure. So to some degree, they are dried out. They're corroded. And they are, to some degree -- variable degree, baked onto the metal surface where they have been placed.

And if they haven't been in service too long, or the temperature wasn't too high, or the pressure wasn't too high, they can be taken off pretty easily with a putty knife. But not infrequently, they would be somewhat baked onto the metal surface. And then it would have to be scraped. And then it would have to be wire-brushed.

And then, sometimes, even a wire brush put on a rotating drill so it becomes a power wire brush, and -- to scrape off the last residue. Because if you don't get that metal surface absolutely clean, then what the new -- putting on the new gasket is not going to be good enough. You're still going to get a leak because you have an uneven surface that you're putting that gasket on.

So you have to get it absolutely clean right down to the metal.

Q Okay. Can you give us, from the literature we've talked about here, whether -- as well as any other gasket literature you've looked at, can you give us an opinion as to -- for each of these what the approximate range of exposure to asbestos would have been for Mr. Seay when he

did these operations on all the different brands he identified?

A So the lowest range is, again, down around a tenth of a fiber per -- less than a tenth of a fiber per cc.

Q For what?

A For any -- for any of those, except the power wire brush.

Q So I'm just putting one, and I'm putting a little squiggly here. That means around one, potentially lower.

A A tenth of --

Q .1, that's right.

A Yes.

Q Up to?

A The highest I know of is 31 fibers per cc. But that's with a power wire brush.

Q Okay. So 31, we're talking about a power wire brush?

A Correct.

Q Okay. Now, 31 -- I'm going to get my calculator out again. Check Facebook. All right. 31 divided by .00005, the background number, what I get is 622,000. Is that about right?

A Yes.

Q Okay. So if you're up here -- if you're at the higher range -- what did I say? 620?

A 622.

Q 622. 620-ish. 620 times above background. All right.

A 620,000.

Q Right. 620,000 times above background.

A Yes, sir.

Q It's getting sloppier as we go along.

Now, in fairness, the literature has lower numbers for something like power wire brushing and higher numbers; fair?

A That's correct.

Q Okay. For instance, Dr. Longo's go into the hundreds; correct?

A Not for power wire brushing, no.

Q Oh, Okay. I'm sorry. Let me check. I don't want to misrepresent it.

You're exactly correct. This is the number that Dr. Longo used. And you can see the worker, for power wire brushing, the range was 14.9 to 31.

A The second line of numbers, yes.

Q Right. The average he got was 21.8; is that fair, for the worker?

A For a short -- for a short time-weighted average, yes.

Q Okay.

A For a brief time-weighted average.

Q Okay. And then he even took that work and he put it over a full day, 2.3 for eight hours; is that fair?
A Correct.
Q Let me ask you this question. Do you have an opinion as to whether or not Mr. Seay would have been exposed in excess of the ceiling limits passed by OSHA from his work with gaskets?
A I do.
Q Okay. And what is that opinion?
A My opinion is that that short-term limit would have been exceeded on many, but not all, occasions that he was using the power wire brush, and even occasionally when he was using the hand wire brush to remove gaskets.
Q Okay. And based on the numbers here, when we get to 1976, and the OSHA number goes to two for the average, is it possible -- or probable that he was exposed in excess of the eight-hour time-weighted average on occasion if he was doing power wire brushing?
A Sorry. That was a little too fast for me. I didn't get it.
Q It was. If he did power wire brushing and was exposed at that higher end of that range, sir --
A Yes.
Q -- over the 10 years, on certain days, is it possible that he was exposed in excess of the two-fiber average

OSHA limit?
A Yes.
Q Okay. You're not saying he was every day; right?
A No. But if he did -- if he did that several times in the same day, he would have been over the OSHA average for that day -- the OSHA rule for that day.
Q Okay. Last thing I want to do is just point this out. You talked about the difference between light microscope; right? The classroom microscope and the electron microscope; right?
A Yes.
Q And so this right here, TEM, what does that stand for?
A Transmission electron microscope.
Q Okay. And what we were looking at before is PCM. That's that light microscope; correct?
A Phase contrast microscopy, yes.
Q So I'm going to highlight this. So the worker was 14.9 to 31 fibers in a cubic centimeter in a sugar cube; right?
A That's right.
Q Using the basic microscope; true?
A Yes.
Q But if you look at the same sample using an electron microscope, you find 877 to 1,636 fibers; correct?

A Well, without reviewing the article, I don't know if it was the same sample, but it was the same activity.
Q Okay. So let's just start with that. Same activity. If you look with an electron microscope, your results appear to be much higher; is that fair?
A Correct.
Q Okay. But this isn't what OSHA uses. OSHA uses the other one?
A Yes. OSHA uses the other one. There's a practical reason for that.
Q And what is the practical reason that OSHA uses the light microscope, instead of electron microscope?
MR. TIVIN: Objection. Calls for state of mind of the [inaudible].
THE COURT: Overruled.
THE WITNESS: The practical reason is that OSHA has to make rules that will be put into effect in the real world. And so practicality enters into it. And they can't demand that every little company in the country go out and buy an electron microscope -- they're big, they're expensive -- or -- nor even the expense of having a consulting firm do it for them. It's expensive to do electron microscopy, very expensive. And it was even more expensive back then.
So it just wouldn't have been practical to say you've

got to use electron microscopy.

BY MR. PANATIER:

Q Okay. And then lastly, I just want to use the paper that we saw that John Crane paid for. Let's just look at their number. You can see -- and I'll highlight this because it's kind of tough to read. But average worker exposures during flange gasket work, the number they came -- came to using the basic microscope was .166 fibers per cc; right?

A 0.166, yes.

Q Right. And you said the low end could be around .1; right?

A Yes. And this is about .2.

Q Okay. It's almost .2. But let's just take that number from this paper.

A Yes.

Q .166 divided by .00005, the background level, and I get 3,320 times above background; is that fair?

A Yes.

Q Okay. So no matter how you slice it, if you use the one from Dr. Longo, who has even testified for plaintiffs, you get -- he had some pretty high numbers; right?

A Yes, he does.

Q And this one, paid for by John Crane, a lower number; right?

A Correct.
Q They're all substantially above background; is that fair?
A Absolutely.
MR. PANATIER: Those are all the questions I have for you.
Thank you.
THE WITNESS: Thank you, sir.
MR. PANATIER: Pass the witness.
THE COURT: Cross-examination.
MR. TIVIN: Thank you, Your Honor.

CROSS-EXAMINATION

BY MR. TIVIN:
Q Let's kind of start -- we'll go backwards to the beginning.
Dr. Holstein, you said you read the deposition of Ronnie Thompson?
A Yes, sir. Got it right here.
Q Mr. Thompson testified -- what is the fiber -- the one thing that Mr. Panatier didn't put on his board, didn't put on his board right here. Mr. Thompson testified that they only had to use a scraper, or wire brush, or wire -- power wire brush 25 percent of the time. So the other 75 percent of the time they didn't need to use any tools; right?

A Yes. I saw --
Q So --
A -- that testimony --
Q -- where would a --
A I'm sorry, sir. Please just let me finish my answer. And I'll try not to override you, also.

MR. TIVIN: Your Honor, I would -- the witness was asked a clear yes-or-no question. And if you could instruct him to answer the question. And he can get an explanation on redirect, if it's necessary.

THE COURT: Well, he's got a right to explain it.

Go ahead.

THE WITNESS: I didn't have anything more to say. I was just -- but I was finishing my sentence.

THE COURT: Oh, okay. Well --

THE WITNESS: I said something like, yes, sir, that's correct. I saw that.

THE COURT: All right.

MR. TIVIN: I apologize, Dr. Holstein.

THE WITNESS: Nothing to apologize for. Just we'll have a clearer record.

BY MR. TIVIN:

Q For the 75 percent of the time that they didn't need to use any tools, what was the fiber release then?
A Oh, it would have been low. It would have just been

a scraper with a putty knife.
Q No. Those are still tools. There is no scraper.
A Oh, I'm sorry.
Q He said 25 -- only on 25 percent of the time did he have to use a scraper, a wire brush, or a power wire brush. So that means 75 percent of the time, he didn't need to use any of them?
A No. He still would have had to use a tool to pop it off. What he meant was he didn't have to scrape.
Q Oh, so you're saying that Mr. Thompson was mistaken in his testimony?
A No. I'm just telling what the testimony was.
Q Well, yeah. He said he didn't use it 75 percent of the time, and you're saying that that's incorrect?
A No, sir. I didn't say that. I am saying he needed to use a tool.
Q If he used a putty knife and popped it out, what would be the fiber release then?
A There would be some, but it'd be extremely low. I don't know exactly what it would be. But it would be down in the tenth of a fiber range, or even less than a tenth.
Q Can you give me any -- you were kind enough to go through a lot of the medical -- the scientific literature regarding gasket. And you've told us that you've tried to review it all; is that correct?

A Yes, I did.
Q Can you give me any article and scientific literature where they report fiber release levels from popping a gasket out with a putty knife without having to scrape the face?
A It could have been any of these papers that show very low results. Because, typically, they said, well, you know, we, for research purposes, had somebody remove the gaskets, you know, using a putty knife or a similar tool, but didn't necessarily describe whether it was hard or easy to do that. So it could have been any of them.
Q Well, you -- well, are you saying -- is it your testimony here today that you believe in Dr. Longo's paper that any of those gaskets popped off?
A I didn't follow the question, sir.
Q Is it your testimony here today that it's your understanding in Dr. Longo's paper, that you just testified at before this jury, that any of those gaskets popped off?
A Probably not, given the results he got.
Q So we can take Dr. Longo's paper out of consideration because that isn't what happened in that -- that wouldn't instruct us as to what the fiber release may or may not be when the gaskets -- when you don't need to use any tools; correct?

A I -- it's still relevant to the other circumstances.
Q Well, I'm not asking about the other circumstances right now.
A Yeah.
Q I'm talking about the 75 percent-of-the-time circumstances.
A It may not be -- may or may not be. It's hard to tell from the text.
Q And I'm sure that you have read and talked about -- you've read, examined Fred Boelter's paper?
A Yes.
Q Airborne fiber exposure assessment of dry asbestos-containing gaskets and packing. Have you seen this?
A I have. The results are down less than a hundredth of a fiber.
Q Here. Isn't one of the criticisms that you've made of this -- of this paper is that the gaskets just popped off?
A You know, I don't recall. I really don't, as I sit here. If you -- if I've said that in some previous occasion and you have a transcript, I'm not going to disavow it. I might have said it. I just haven't read this recently enough to remember that detail.
MR. TIVIN: Okay. If we could -- is this on?

MR. PANATIER: We're bringing it up over there. Hold on. Stop pressing buttons.

MR. TIVIN: I like pressing buttons.

MR. PANATIER: Hit it again. Hit it again.

MR. TIVIN: I like pressing buttons. Doesn't that fix everything?

BY MR. TIVIN:

Q This just says -- we'll go. We'll start at #1. This says --

MR. TIVIN: Start over here. Sorry.

MR. PANATIER: You can zoom out.

MR. TIVIN: No. That makes it too easy.

BY MR. TIVIN:

Q This says flat-blade scraping. Do you see that?

A I'm sorry. Where are you taking me?

Q Well, there are only three words on -- flat-blade scraping. It's the one at the top of the --

A Oh, yes, I see it. Flat-blade scraping. Yes, I see it.

Are you looking at table one?

Q Yes, I am.

A Okay.

Q The number he got for flat-blade scraping -- the maximum that he got was .035 fibers per cc, that was the -- that was the maximum; right?

A Yes. I'm familiar with the paper.
Q No. I -- I appreciate that you're familiar with the paper, Doctor. But that's what it says, the maximum is .035 fibers per cc?
A Yes.
Q And the minimum would be .028 fibers per cc?
A Correct.
Q Do you know what a stereophonic finish is on a gasket?
A Stereophonic?
Q Yeah.
A No. I don't know what a stereophonic -- did you say a surface?
Q Yeah. Finish. I said "finish."
A Finish. No. I'm not familiar with that.
Q Are you aware that some gaskets -- it's called a stereophonic finish, because it has grooves in it like a record player. Did you know that?
A Yeah. I knew some of them were grooved, but I didn't know that phrase.
Q And do you know if any of the flanges out at Hoechst -- I believe I'm pronouncing that correctly -- Hoechst Celanese has stereophonic finishes on it?
A I Don't know.
Q Do you know if it's harder to get gasket material out

of gaskets that have stereophonic finishes versus ones that are smooth?

A Do I know which, sir?

Q I'm sorry. Do you know if it's harder to remove gasket material from gaskets with the stereophonic finishes with the grooves than from flanges that are smooth that don't have any?

A Well, first of all, the sheet gasket material does not come grooved. And that's what the testimony is that these men fabricated.

Q You're misunderstanding me. The flange has grooves in it.

A Yeah.

Q Okay. So the gasket gets stuck into the grooves between the flanges. Okay.

A Well, you were telling me that there is a stereophonic finish --

Q Finish --

A -- on the gaskets.

Q No. On a flange.

A Oh, I'm sorry. I misunderstood you.

Q I'm sorry. My fault.

Some flanges have stereophonic finishes that have grooves in them; right? You've heard of that?

A I don't recall whether that's the case or not.

Q Okay.
A Most of the flanges I've seen and most of the evidence that I've reviewed in my career indicates flat faces of the flanges.
Q Do you have any idea when you would use a stereophonic finish on a flange versus a regular smooth finish?
A I'm not an engineer. I don't know.
Q Do you -- one of the things you talked about with the jury was that they used a power wire brush; right?
A Yes.
Q There's no indication anywhere in any of the depositions of Mr. Seay or Mr. Thompson how often they had to use a power wire brush. They just said they had -- that it had to be used; correct?
A Oh, they used sort of ordinary language. They'd say from time to time or, you know, pretty often, that kind of language. Nothing exact.
Q They didn't use -- are you telling the jury that Mr. Seay or Mr. Thompson said they had to use a power wire brush pretty often?
A They used it regularly.
Q And by "regularly," at least, from -- Mr. Thompson said they didn't use anything 75 percent of the time. So for you "regularly" is -- what percentage of the gaskets

that stuck on did you need to use a power wire brush? Because you realize that sometimes you just had to use a scraper. Sometimes you had to use a scraper and a wire brush. And then they said sometimes you had to use all three; right?

A Yeah.

Q Do you know which one of those was the most common, from your reading of the transcripts and talking to the jury about the frequency, proximity, and regularity of his work practices?

A Well, I don't -- I don't recall. If it's in -- if that question was asked, I don't recall it. I know it's generally the case in similar industrial circumstances.

And what's generally the case is that most of them can be done with a scraper and a wire brush. And how often the power wire brush is used depends really upon how close at hand it is. It's a nice way to finish off the surface, if you have one close at hand. If you've got to go to the shop to get it and come back with it, you'll finish it off by hand.

Q Now, Mr. Seay didn't say that it was a nice way to finish off the surface, or anything like that. He said that if he couldn't get -- usually, when you're talking about -- well, I'm sorry. I'm talking too fast. I'll slow down.

You, also, realize that one of the most important things in changing a gasket is the last thing you want to do is scar or do anything to the flange face; correct?

A That's right. You do not want to create a groove or a cut in the metal facing.

Q And you realize that the -- because if you do anything to the flange face, number one, you have to either -- you have to replace the whole flange instead of the gasket because --

A Yes. That -- that piece of equipment has got to be replaced.

Q -- because there's a leak path?

And you would agree with me that if someone was using a power wire brush, that's a lot -- those are made out of metal; right, The power wires are made out of metal.

A The brush is a metal brush, yes.

Q And so if you have a metal brush on the end -- on the end of a drill bit, and you're going zz zz zz, that has a good opportunity to scratch the face of the -- the metal face of the flange, doesn't it?

A These men knew how to do it.

Q Well, that really wasn't my question. I didn't ask what they --

A Well, that's what they went through their training for was to learn that kind of thing.

Q What -- where did you hear that, at any point in time, Mr. Seay had got any training on how to use a power wire brush and under what circumstances he used a power wire brush?

A In that plant, they had on-the-job training. So he was taught by the more experienced men when he first started.

Q Was there a -- I guess we watched Mr. Seay's testimony yesterday, and then we read it for about a million hours, it seemed like to me. But nowhere in there did he testify that anyone taught him when or where to use a power wire brush. I'm wondering where you got that information.

A Nobody -- nobody in a responsible complicated factory is going to take a brand-new guy and turn him loose. They've got too much at stake. That equipment costs tens of thousands, hundreds of thousands of dollars. It's just not going to happen.

Q So you're just making that -- I just want to make sure that we're clear that you're making an assumption here. But it isn't anything that was testified -- that's an assumption that you're making; right?

A It's based on my experience.

Q Right.

A I mean, either the person goes through a formal union

apprenticeship that can last three or four years to become a millwright, or they get on-the-job training. But nobody takes a brand-new person and just sets them loose and says, go scrape that gasket off. Use whatever tool you want to. It's not going to happen.

Q See, now, it's too small, or my eyes are too bad.

This is it back to table one of Dr. Boelter's study. And as you know from -- because you're familiar with the study, that this involved industrial and maritime fittings; right?

A Yes.

Q Maritime fittings are just flanges that are found on boat. And industrial fittings are flanges that are found in a factory?

A Yes. That's right.

Q And Dr. Boelter had his power wire brushing. I think -- I didn't get enough. The minimum was .02?

A .002.

Q Oh, I'm sorry. The maximum was .02. If you look at it, it says, power wire brushing?

A There it is.

Q Power wire brushing. It says .02. Minimum is .02, with a standard deviation of .0002. So he got .02 when he did his power wire brushing?

A .02. That's right.

Q And did you consider that number when you were testifying about what's the fiber release from using a power wire brush?

A Yes. I -- my testimony was less than a tenth of a fiber.

Q No. I believe -- I believe your -- maybe I misunderstood. But I believe that when you said less than a tenth of a fiber, you were talking about scraping. When you talked about the power wire brushing, you said it was 31.

A You're right. I don't think I addressed the lower limit. But the lower limit is low.

My whole testimony has been that all of these measurements have a wide range. Everything that's on those flip charts, for various measurements for various -- this one and the preceding sheet. My testimony is there's a wide range.

Q Do you have any information as to whether Mr. Seay would have been exposed to the .02 when he power wire-brushed versus the 31?

A I think the .02 is an outlier. It's at the extreme end. Just as I would not say that he was always being exposed to 31, I would not be saying that he's always exposed to the .02.

Q When you say "outlier," that's interesting. Outlier

is a term in science when one of the -- one of the data points is way outside all the other data points; right?

A More or less.

Q And so you kind of -- you kind of discount it. Because you're like a ton are over here. And then one is way over here. And then you're like, we can't trust that one because it's too -- too much; right?

A More or less correct.

Q Now, there is another study by Dr. Madl. I'm sure you're familiar with it. It says "Exposure to air" --

MR. TIVIN: I'm sorry, Your Honor. May I approach the witness?

THE COURT: Sure.

BY MR. TIVIN:

Q I'm just sort of wandering around out here. I apologize.

It's called, Exposure to airborne asbestos during removal and installation of gaskets and packings. It's a review of the published and unpublished studies. You've seen that before; right?

A Yes. We were just talking about it.

Q No, you weren't. You were talking about another study.

A Oh, I'm sorry. You are correct.

Q Now, what was done in this study was that Dr. Madl

took everything in the literature, every gasket study and put them all in a -- in a chart. She compared them all; right?

A Yes. But show me which chart --

Q She didn't, actually, do any work in this one. What she did was she said, here's what's in the literature. Here's everything that's in the literature, What we got going on; right?

A Correct.

Q So -- and in here, she has a -- charts of everyone who's done studies, including Dr. Longo; right?

A Yes. I'm not sure it's --

MR. PANATIER: Mark, what's the date of that one?

MR. TIVIN: 2007.

BY MR. TIVIN:

Q Now, I want to make sure I get to the right part. In this paper, she discusses Dr. Longo, does she not?

A I don't recall.

Discusses him personally or discusses his results --

Q Discusses his work.

A Oh, I'm sure it's in here, yes.

Q And when she looks at the other studies on here and -- I'm sorry. This is -- I'm sorry. I'm a little bit disorganized.

None of the other power wire brushing numbers come

even close to 30, do they?
A No. That's at the high end of the range.
Q None of them are either -- none of the other ones are even over 20?
A Well, he had -- I forget all of his numbers. But I don't think others have gone over 20.
Q Dr. Millette --
A But would you show me what numbers you're referring to in this paper, please?
Q They have a chart. They have all of the --
A Well, they have a lot of them, sir. Sorry. I didn't mean to talk over you.
Q Okay. I'm sorry. I thought that you were familiar with it. I'm sorry.
Can I take this, and I'll find it for you?
A Thank you.
Q Thanks.
Wire brushing. Wire brushing. Here's power wire brushing. And then it's Boelter. And it was .02. We've discussed that one. Here's a power sander that's a 1.4.
A May I see it, please?
Q Sure. I'm sorry.
A Thank you.
Q If you just look in there, you can see.
And I can just move on, if you'd like. I mean,

that's fine. I can move on.

You were talking --

A No. I'm here to answer your questions. It's --

Q Right. But I don't want --

A -- not what I want to do. It's what you want to do.

Q But it's, also --

A But I'm -- if you are asking me about numbers, then, please, let me answer whatever the question is.

Q Okay. I'll withdraw the question. I'll move on.

You testified about Cheng and McDermott?

A I did.

Q And you rely on them for your numbers?

A In part, yes.

Q Yeah. They -- in theirs, they used a power sander, right?

A So this is the Cheng and McDermott paper now?

Q Yeah.

A Okay.

Q They used a power sander?

A Well, they did use a power sander, yes.

Q And they got one?

A They got 1.4.

Q 1.4. Okay. I can't seem to find my Dr. Millette paper. But you're familiar with Dr. Millette?

A Yes, sir.

Q And he's done power wire brushing?
A Yes, he has.
Q And this is just from memory. But is it -- my memory serves that -- I believe that his number was like 16.4?
A The number I remember is 6.8.
Q 6 -- that's even better. 6.8?
A Yes.
Q And that's for power wire brushing?
A Yes.
Q So we got -- for the power wire brushings, we have 31. And then we got 6.8 that he testifies for plaintiffs; right? Dr. Millette?
A I'm told he does, from time to time.
Q 31 from Dr. Longo. Then we have 6.8. And then we have 1.4. And then we have .02. And it seems that one of those was much higher than all the other ones, and that would be Dr. Longo's. At what point does one become an outlier?
A There's no specific definition of that. But I would say the same thing is true at the low end.
Q So you would -- so throw out the high and throw out the low --
A I'm not throwing anything out. I'm saying that all -- that when you do work, the results are highly variable. It depends on how hard is this gasket baked on?

How long has it been there? How corroded is it? How -- how much pressure is applied when you use any of the tools? How long do you do it for? All those kinds of -- all those kinds of variables will affect the outcome. And sometimes we don't know why they vary a lot, but they do vary.

Q And those are all important things to know in order to determine what the actual fiber release is from these gaskets; right?

A Well, these are the fiber releases, yes.

Q But in order to know which number to pick, I mean, if some of them is really baked on or something like that, then you might go one way. And if something just comes out, you might go another way. That's kind of what lets you know where to go in this range; right?

A No. It's possible to bring order out of diversity. It's not a big deal. You see what their -- where the results usually are. And the results usually are in the low single digits, fibers per cc for hand tools. And it's higher single digits on average for the power -- for the power tools.

Q Now, you would agree with me that when you have the low number here, you have approximately .01. So, now, what -- I believe what you told the jury that, at least, the range for using Dr. Boelter is that the low range

would be, at least, .02; right?
A For -- I'm sorry. For Boelter?
Q Yeah.
A Yeah. Boelter had a low result, yes.
Q So when we have .1 to 31, it should, actually, be, at least, .02 to 31?
A Well, what I said verbally on -- and there's a little squiggle next to that .1.
Q Which means approximately?
A Yeah. But what I, actually, said was from less than .1 up to 31.
Q All right. So how much less than .1 do we get to go?
A Well, .02 is 50 times less.
Q Right. But --
A And so that's just as much as -- of an outlier. For instance, if you go from 2 to 31, that's a 15-fold difference. But going in the other direction, it was a 50-fold difference. So they're both outliers.
Q And outliers -- do you find outliers to be reasonably reliable when you're discussing fiber release with a jury?
A No. I go with the -- what people call the central tendency. In other words, about where the average is.
Q So I'm just saying, when it says this -- you've just now told the jury that you think that this 31 is an outlier?

A Yes. I did say that.
Q So when we have the 31 being an outlier, that's not -- an outlier isn't something you can rely upon as a scientist in determining what fiber release is. That's why they call it an outlier; right?
A You rely on it as part of the entire picture. You're the one who's talking about taking certain results and throwing them out. I'm saying, no, I don't do that. I take them all into account. And I look at the question as where about is the average.
Q Okay. And so for the average for -- just the power wire brushing for now, we believe that that might be what? I believe it was six? Is that what you said? The average?
A For power wire brushing?
Q Yeah.
A It's somewhere in the higher single digits, yes.
Q So six to nine --
A Six, seven, some -- anywhere in there would be a reasonable estimate of this central tendency.
Q And for the -- just the regular wire brush, what's that average?
A Low single digits.
Q If power wire brush is six to nine, what's the regular wire brush?

A Lower single digits. One, two, three, in that range.
Q One, two, three. And then what is the scraper?
A Maybe -- it depends on how hard they have to scrape. But it could be tenths of a fiber. It could be a fiber. It's going to be variable, too.
Q Could it be hundreds?
A I mean, these are men at work. This is not a scientific laboratory. These are men at work. And then these are scientists who are trying to simulate men at work. And this is not like doing some precise experiment of science in a laboratory somewhere. There are many variables here that, in real life, aren't controlled.

So if you're going to do a simulation, you, also, have many variables that are not controlled. And so you get very diverse readings.

Q So the lower limit would be in the hundreds, hundredths of .01 or .02 for the hand scraping?
A Yes. We've established that.
Q Okay. I just wanted to make sure we're clear there.

And for the insulation, I believe Mr. Seay testified that he had to hammer and chisel off cement, right? Asbestos-containing cement?
A Well, it's called asbestos cement. It's not really cement like your driveway, but it's called asbestos cement. So the answer is yes.

Q And after he chipped it off with a screwdriver or a hammer, I think he said, then he said he had to take a wire brush and clean off the surface; right?

A Yes. Sometimes he had to do that.

Q And he had to do that -- well, he had to do it more than sometimes. Didn't he say he had to do it every time to access the bolts?

A No. I don't think so. But if you want to -- if I've misremembered, please, point me to it.

Q As someone looks for that -- it was somewhere in there yesterday.

But he testified that they -- that they put the insulation on, and then he had to get it off to access the bolts. Remember?

A Yes. You don't need -- you don't usually need to wire brush it down to get to the bolts. But --

Q Well, he said he cleaned it off. And that was -- I believe the testimony was -- and the jury will be the ultimate judge of the facts. I believe the testimony was that he chipped it off with a screwdriver or used a hammer, and then used a wire brush to clean the rest of it off, so he could get his wrench in there and open the -- crack the nuts and open the flange.

Now, you're, also, aware, when you replace a gasket, there are a lot of different things that have to go on

when you replace a gasket; right?
A Yes.
Q The first thing you have to do is you have to expose the flange?
A Right.
Q And expose the flange in Mr. Seay's case meant having to go through this little bit of asbestos cement or insulation --
A It's called mud. And then it dries, and then it's hard. But it's not hard like your driveway.
Q Going through whatever to get to the bolts; right?
A Yes, sir.
Q And then the next thing you have to do is you have to take the bolts off?
A Yes.
Q And then the next thing you have to do is you have to split the flange apart?
A Correct.
Q And then you have to remove the gasket?
A Right.
Q And then you have to put one in?
A Yes.
Q Now, it's the -- it's your understanding -- well, it's your understanding that Mr. Seay, with regards to the putting the gasket in, he always had a precut gasket;

right? Either someone made it in the shop or they bought it precut. But he didn't formulate his gaskets at the flange; right?

A The testimony is for about the first three years, they fabricated all their own gaskets. After about three years, some of them were coming precut and some of them were not.

Q But at the point when he's installing them -- when he's at the flange installing it, it was already cut?

A Oh, at that point in time, somebody had cut it. Either a factory had cut it before it got there, or Mr. Seay himself, or one of the other men had cut it by hand.

Q You would agree that in a -- in a new condition, a brand new gasket, that those are not friable; correct?

A I agree.

Q And you would agree that a brand new gasket, when you're installing -- when you're just dropping it in and installing it doesn't result in any fiber release?

A Actually, it does. It's been measured. It's a detail. I don't want to quibble. It's a very, very tiny amount. But it has been measured. It does release a little bit.

Q Is it any amount that you would consider significant as a preventive medicine physician?

A Not unless somebody did that all day long for a long time, in which case I'd have to really think about it.
Q In the stuff that Mr. Seay mentioned, did he do it enough to give you pause about installing these gaskets?
A Not if you're just talking about the process of taking a brand new precut gasket and plopping it into place, no.
Q Okay. So --
A If you limit it to that, the answer is no.
Q Then that was my question. Limited to that, that -- there's no fiber relief -- fiber release that you would be concerned of as a physician; right?
A Correct.
Q Now, the -- cutting the gasket with a knife, there's, also, another range of -- range of exposures that are possible; correct?
A Yes.
Q And do we -- I don't know if we have to go through this all over again. But is it your -- cutting with a knife, you get some of the -- the absolute lowest fiber release numbers possible; correct?
A Pretty low.
Q And here, you had the same thing for cutting with a knife and removing. You would agree with me that cutting with a knife is always going to be lower than removal,

wouldn't you?
A Lower than removal of a used gasket?
Q Yeah.
A Unless that gasket is brand new that's being removed. If somebody put it in place, they closed up the flange, it leaked right away, they opened up the flange, took the brand new gasket right out, then I would -- then, otherwise -- if it were not that situation, then I would agree with you.
Q And -- okay. And that's the situation of Mr. Seay. So you would expect this one, also, to be in the hundredths -- because I know this is -- you said "less than," but that means approximately.
You would expect it to be in the hundredths of a fiber per cc for cutting a gasket with a knife?
A Or tenths.
Q Okay.
A Tenths of a fiber.
Q And you would expect someone who was hitting asbestos-containing mud -- or what Mr. Seay called asbestos-containing cement, you would expect those fiber release numbers to be much higher?
A Yes.
Q And you would expect it -- orders of magnitude higher?

A Than cutting a new gasket?
Q Yeah.
A Yes. Yes, I would.
Q I mean, if it was -- if it was -- if you could get exposures from hitting asbestos-containing cement and hitting it with a wire brush, I would expect you could expect up to -- into the higher end of the range of your insulation numbers. Would you agree?
A Not for -- not for a small job. Not -- if you mean in the hundredths, no.
Q No, not over a hundred. I mean, just -- you would expect it in the higher range, though. Because he, also, testifies -- didn't he, also, testify that he used a hacksaw to cut it off sometimes?
A He Used a hacksaw for something, but I'm not sure it was that.
Q It was cutting insulation, wasn't it?
A I think it was cutting new insulation to put it into place.
Q Okay. So you -- you've seen numbers about cutting it with a hacksaw; right?
A Sure.
Q And those are very high numbers; right?
A Yes. Those can be dozens of fibers, occasionally, hundreds of fibers.

Q So that can get all the way -- using your range, that could get up to hundreds of the fibers. So that seems, using your numbers that -- using a hacksaw could be -- that would be five zeros -- 10,000 times more than cutting a gasket with a knife?

A I don't know. I haven't done the arithmetic in my mind. But I certainly agree it could be several orders of magnitude.

Q And an order of magnitude, when you say that, it's times -- it's logarithmic. It goes ten, hundred, thousand; right?

A Yes.

Q Anytime you add a decimal point?

A Yes. That's true.

Q And with regards to the cement, you said that could be dozens of times; right? You did say the cement with the hammer and the wire brush, that could be dozens of times; right?

A Dozens of times of what --

Q Dozens of fibers per cc. I'm sorry.

That could be dozens of fibers per cc?

A Yes, it could.

Q Okay. So if that was 36, that's three dozen. And if we were at .02, that would be what? I don't know where the calculator is on my phone, but --

A It would be five times 36 -- no. It'd be 50 times 36.
Q 50 times 36?
A Yeah.
Q So that's 200 -- that's 2,100?
A I'm not sure. I don't want to testify on the record for something that I'm -- just trying to come up with off the head --
MR. TIVIN: Chris, can I borrow the calculator? Or can someone do 50 times 36? I get 2,100 in my head.
MR. PANATIER: 50 times 36. 1,800, I think.
MR. TIVIN: 1,800?
MR. PANATIER: Yeah. I think. Because 100 times 36 --
MR. TIVIN: That's fine.
MR. PANATIER: -- would be 3,600. And then divide it in half, 1,800.
BY MR. TIVIN:
Q 1,800?
A Okay.
Q Okay. So that would be 1,800 times more release for the insulation than the cutting the gasket?
A Fair enough.
Q And that would be every single time that you did the insulation?

A No. My testimony is very consistent. This job is never the same one time to the next --
Q Well, that's why we're using --
A -- and the results show that. It's different every time.
Q But he's removing insulation on every single flange. That's what he testified -- isn't that what he testified to?
A To get to -- if the flange has been insulated, he's got to remove it to get to the flange.
Q So every single time that he wants to remove it -- use a gasket, he has to remove insulation; right? If there's insulation there, he's got to get through it to get to the flange?
A If there's insulation there, he has got to remove it, yes.
Q And I believe he testified that he always had to remove it, not in whole sections of it, but just enough to expose the bolts?
A Correct.
Q And that those activities had to be done every single -- every single time?
A Every single time there was insulation on the flange.
Q Right. Now -- now, these are -- I'm going -- I only have one copy. So I'm going to have to just show you

these. Okay.

These are -- you're familiar with answers to interrogatories?

A Yes.

Q And you're familiar with what they are. They're questions that each side sends to the other side, and they have to be answered under oath?

A Yes.

Q And in this one -- that's in this case, right, Dennis Seay v. People, et al.?

A Yes.

Q Okay. And it looks like Mr. Seay signed it?

A It does.

Q And said they're true --

A Correct.

Q -- to the best of his knowledge?

A Yes.

Q And Mr. Seay -- this is something called a work history sheet that was attached. See, it says, work history sheet?

A Yes, I do.

Q And this is for a place called Bristol Metals?

A Yes, sir.

Q At Bristol Metals, Mr. Seay said he used some gaskets?

A Okay.
Q Is that what it says?
A That's what it says.
Q It says he worked with Armstrong, Garlock, and Cranite?
A Correct.
Q Were you aware of this information when you testified earlier that Mr. Seay didn't have any asbestos exposure at any other site besides Hoechst Celanese?
A I was told that early on there was a belief that there may have been and that, as the evidence developed in the course of the case, that it -- the conclusion was reached that there was not until he got to Hoechst Celanese.
Q Well, at least, Mr. Seay thought that was correct when he signed those answers; right?
A I can't speak for his state of mind. But, you know, he did swear to it. So I presume that, at that time, he thought that could be the case.
Q And then this is Hoechst Celanese; right?
A Yes, sir.
Q There, he listed Armstrong, Garlock, Cranite, Flexitallic, and John Crane; right?
A Yes.
Q And he, also, had pipe covering and -- by Johns

Manville and PABCO?
A Yes.
Q Now, when it says, pipe covering and block insulation, do you -- is this -- was this where you would include the cement?
A That's not usually called pipe covering. It's just called mud or cement.
Q Okay. I just wanted to know if you would include it in there. Because then it goes down and it says -- talks about pumps, valves, compressors, boilers. And it says he wore a mask; right?
A Yeah. A paper mask.
Q So you believe that, based upon your review of the testimony, that there should be another category here that's for mud that he worked with and around; right?
A I do.
Q Okay.
A But I'm not saying -- well, that's -- I'll leave it at that.
Q You got your information from the depositions in the case; right?
A Correct.
Q And sometimes the depositions can be different than the answers to interrogatories; right?
A They can be sometimes.

Q Now, when you reviewed the information in this case, they sent this stuff to you and you took notes; right?
A I took some notes, yes.
Q Is this a correct copy of your notes? Just so you can --
A It certainly looks like it.
Q I just want you to check all the pages. When I put it up there, I don't want it to be wrong, or anything. It looks like this?
A Yes. That's correct.
Q In your notes that you took of Mr. Thompson's testimony, you took down what you thought was the important stuff -- the stuff that you considered important in preparation of your report and your testimony in this case?
A No.
Q Okay. What's -- well, why else would you take notes if you didn't think it was important?
A I get asked that question many times in depositions. And the answer is that I take notes on those issues that I think I am most likely to be asked questions about during the deposition so I can get to the answers quickly and efficiently.

And what I'm likely to be asked about in a deposition, based on my experience, is not always the same

thing as what I think is important.
Q Okay. Did you think that when you were going to be asked questions in this case that they were going to ask you who made all the gaskets?
A Yes. I expected that.
Q Okay. And so that's one of the things you paid particular attention to?
A I did.
Q And one of the things that you made sure to note was that -- it's going to be on the third line -- is that that they always used John Crane, but not more than any of the others?
A Correct.
Q So when you say it's not more than any of the others, that would mean, to you, that they were each used equally. Would that -- would that mean to you?
A Approximately so.
Q Approximately. Obviously, you might have 51 and 49 of the other, but that would all be --
A We're reaching back 40 years. So this is people's best memories. And approximately they used them all about the same.
Q Was there any indication to you in any of the -- any of the testimony that you read that any of the John Crane gaskets were the ones that were stuck on?

A Do you mean as opposed to the other brands? They were all stuck on at times.
Q How do you know they were all stuck on?
A My experience.
Q So --
A -- I don't -- I mean --
Q I asked a poor question. Was there anything in the materials that were sent to you or any of the testimony in this case that led you to believe that the John Crane ones were the ones that were stuck on, or were the ones that weren't stuck on?
A I don't recall that either of the witnesses was, actually, asked that question.
Q So there wasn't any information -- so you're just assuming that it was?
A I don't recall that either of the witnesses was, specifically, asked whether John Crane gaskets were stuck on. It's clear from their testimony that some of the gaskets were stuck on. That's why they had to use wire brushes and power wire brushes.
Q Right. But you don't know whose?
A All of them.
Q That's the --
A All of the brands.
Q That's the assumption that you're making; correct?

A Well, first of all, the question was not asked in the deposition, to the best of my memory.
Q Right. So you're guessing.
A So I'm not guessing. I have almost 40 years of experience in this field, taking occupational histories from hundreds of people who did this kind of work. And I've read scientific articles about it and industrial hygiene articles about it. I've spent years studying this.
Q When was the last time you saw a patient?
A Well, I have not been a clinician for a long time, so --
Q When you say you haven't "been a clinician for a long time," what's that mean?
A I haven't been a treating physician for patients in a long time because my field is prevention.
Q Okay. Well, let me -- I guess I'm not clear. What was the last year that you saw a patient?
A I saw a patient -- I saw more than one patient last year. I don't know whether it was 20 or 30, but some number like that.
Q Where you saw -- it's your testimony here today you saw 20 or 30 patients. Did you see them in your office?
A No.
Q Well, you don't -- do you have hospital privileges

anywhere?
A No. I don't need them because I do prevention.
Q If you didn't see the patients in the hospital and you don't have an office, where -- where did you see them?
A In Port Allegany, Pennsylvania, as part of the Port Allegany Asbestos Health Program. And I saw them in a local community health center, which is an offshoot of a local hospital where I have been allowed to see patients. It's perfectly legal, nothing wrong with it because it's part of this community-established program. And some of the people that I see in that program scrape gaskets.
Q Okay. Now, they scrape gaskets while they are working on the Unibestos -- making the Unibestos pipe covering?
A No. They scrape gaskets in doing the maintenance and repair work.
Q Okay. Now, putting aside the Port Allegany work, when was the last time you saw a patient -- when was the last time you had a clinical practice?
A I had a clinical practice up until 1997.
Q 1997 --
A But it was not -- early in my career, I was seeing patients day and night, critically ill patients, patients bleeding, patients in shock, patients -- heart attacks. But as I got into prevention, the degree to which I was

seeing -- treating patients steadily diminished. Because what I was involved in was preventive work, which is a different kind of work.

Q So you haven't had a medical practice in about 18 years?

A Since '97. Yeah, that's about right.

Q About 18 years.

A That's correct.

Q And before that, you -- also, as part of your work, you'd be hired by plaintiffs attorneys to provide examinations in other states; right?

A Yes.

Q And some people have called those asbestos screenings?

A Some people call them screenings. I don't, but they have been called that.

Q And that's when you -- one of those was in the Virgin Islands?

A Yes. That was a good one, St. Croix.

Q And when that happens, a plaintiffs attorney flies you down to -- or pays you to somehow get down to where the screening is. And then you look at people for him to see if they have asbestos-related disease; right?

A Yes.

Q And the purpose of that is to see if -- well, we'll

let -- I'll leave that one alone.
A The only -- I need to modify my answer because you asked it in a present tense. It's been over 10 years since I've done that. But I have no -- I have no shame about that. There's nothing wrong with doing it. I'm giving people good examinations that they might not otherwise get from a person who is a specialist in something that matters to their health.
Q And do you get paid by the person? You get paid -- the people don't have to pay you, the plaintiffs attorneys pay you; right?
A Yes.
Q And they pay you -- and you're making -- now, you're making $700 an hour, I think you said?
A Yes, I am.
Q I don't know if I heard that right. Did it just go up recently?
A No. It's been the same for about three years.
Q Okay. And you work -- it's my recollection you that worked about -- at the -- consulting in asbestos-related matters about 20 hours a week on average?
A No. That's not quite right. It's quite different now from when I was younger, because I'm past retirement age. I've made changes in my practice. I'm -- I am --
The question was exactly what, sir?

Q Now, how many hours a week do you spend doing this asbestos stuff for plaintiffs?
A It's probably in the neighbor -- well, actually, it's probably not far from 20 hours a week. Yes. That's probably true.
Q Okay. And it's been that way for a couple years?
A Yes. But not all of those hours are compensated hours. So it's not a guide to my earnings.
Q When you came out here today, did you fly, I assume?
A I did fly, last night.
Q Now, is -- your flight charge, is that part of the 700?
A I charge for the time that I'm away from my office, yes.
Q No. I mean the actual cost of the plane ticket.
A That gets billed, yes.
Q Separately?
A Yes.
Q So it's not --
A No, not separately. It's part of the same bill.
Q But you know what I mean. It's not like $700 an hour and then you spent a thousand dollars for a plane ticket and you take it out of that; right?
A It's an additional charge.
Q Yeah. And how much time have you spent working on

this case?
A Well, back when I was deposed on it, I don't recall because that was -- that was back quite a while ago. So I don't recall. I spent two or three hours re-reviewing these materials before I came down here. And then I came down here starting yesterday afternoon.
Q So you reviewed the materials three times, right? The First time was when you originally got it. The second time was right before your deposition. The third time was last night?
A No. I -- I wouldn't review it until just before the deposition.
Q Right. But you didn't review the material when you got it?
A No. I might get it months before the deposition. If I review it, by the time they're questioning me, as you are today, I would have forgotten it.
Q Now, when you go down and when you did your screenings, one of the things you do is you read x-rays?
A Yes.
Q Now, you're not a radiologist, right?
A I'm not a radiologist.
Q And you're a -- you talked about an A reader. There's, also, something called a B reader; right?
A Correct.

Q After you take -- after you take the A reader class, then normally you sit -- then you sit for the B reader exam; right?
A Yes. That's right.
Q And the B reader -- and that's put on by NIOSH, isn't it?
A Yes. NIOSH has a role in devising that examination.
Q And what does -- what -- the purpose of being a B reader is you can compare X-rays to determine if there's pneumoconiosis in the lung and the proper way to grade them; right?
A Approximately correct, yes.
Q And you didn't pass that exam; right?
A I did not pass it.
Q And you didn't pass it more than once; right?
A I didn't pass it twice.
Q And when you went to the Virgin Islands, you made $150,000 for that one?
A No, sir. That's -- that's misleading.
Q How about this. You were paid 150,000 for it? What's -- were you paid 150,000?
A No. I wasn't paid. My practice was paid. And I don't want to sound like it's a hair-splitting quibble. I brought down a team of five or six people, including, at least, one other physician, a nurse, a couple of clerical

people.

I paid for everybody's airfares. We rented cars. We rented hotel rooms. We rented the medical clinic. We paid for X-rays. We paid for blood work. We paid for electrocardiograms. We paid for pulmonary function tests. We had to pay to ship our pulmonary function test equipment, to ship it, and then to get it past customs into St. Croix.

So there was a lot of expense involved.

Q Including -- was that one the one where you used your -- you had your daughter or your son?

A It was -- it was three or four trips altogether. And I brought my son as one of the clerical people and paid him for one of those trips. And another trip, I brought my daughter and paid her.

Q And that --

A And they did a good job, too.

Q I'm sure they did. But that was out of the 150,000. You didn't pay them out of your own pocket. You paid them out of the money that was being paid to you for this; right?

A Yes.

Q Now, you usually testify about -- in trial about 10 times a year?

A It varies. Sometimes it's -- sometimes it's been

five or six in a year. And I think the peak year was like 13 times. So it's in that range.

Q Is 10 a good average?

A No. I think that's a little high, but I don't remember exactly.

Q And for every trial that you do, there's a bunch of -- there are many depositions that you do; right?

A Well, for that case, I will usually only have been deposed once. But then there are other cases where I'm deposed, but there's never a trial.

Q Right. I was trying to go backwards. So it's the least amount of trials. And there are a lot of deposition; right?

A Correct.

Q And then even more than the depositions, there's even reports that you write?

A Yes. In some cases, there are reports. In other cases, there are not reports.

Q And there are more -- there are the most report. And as a matter of fact, you allow plaintiffs attorneys to list you on their witness list without even asking you first?

A I don't have any control over that. If I had control over it, I would ask them to ask me.

Q Have you ever told --

A So attorneys all over the country could be putting my name down on legal documents saying I'm going to testify in their case, and I know nothing about it.

Q Have you ever told a plaintiffs attorney don't -- not to put me on your list?

A I've never been asked.

Q No. That wasn't my question. Have you ever told them, don't put me on your list?

A No. Because there are the attorneys that I choose to work with, and then there are the other attorneys that I don't even know. And how can I tell people I don't even know don't put my name on a list?

Q And you've been -- I'm trying to -- what I don't know is -- when did you start testifying?

A Oh, a good five years after I went into this field. I didn't go into this field to testify. I went into this field to study the health effects of asbestos and other toxic substances in the workplace.

And five years later, the attorneys came to my boss, Dr. Selikoff, and said, we'd like to have some of your people testify in trials.

He said, Okay.

And then they asked me. I didn't know they had already talked to Selikoff. So I went down and said, Dr. Selikoff, is it okay if I do this?

He said, Yes.

So I did it.

Q Okay. When?

A 1980 -- I'm sorry. 1981.

Q Since -- that's 19 -- 34 years?

A I can go on for a long time if you encourage me.

Q So you've been doing this -- you've been testifying for about 34 years?

A Yes, whatever that is, since 1981.

Q And in 34 years, you've been testifying for plaintiffs?

A Yes, sir, I have.

Q Every single trial you've ever testified for has been on behalf of plaintiffs?

A Well, I'm happy to testify for defendants. I've often said that. But I have no choice over -- and there are many cases where I don't believe in the plaintiffs case, and I tell them that.

So I'd be happy to take the witness stand in such a case. But I don't have any control over whether you or others would decide to hire me.

Q Okay. I'll ask the question again. You've never testified on behalf of a defendant in an asbestos case?

A You're correct for the reasons I stated.

Q You've testified for Mr. Panatier's firm a number of

times?
A Yes, I have.
Q You've testified for Weitz & Luxenberg?
A Once or twice.
Q You've testified for Connelly & Vogelzang?
A Yeah, a couple of times. Not any time recently.
Q It was in the last month or two, wasn't it?
A No. It's been years.
Q What?
A It has been years.
Q You've testified for Waters & Kraus?
A Yes.
Q They're out of Texas?
A Correct.
Q And you have a good relationship with Waters & Kraus, right?
A I guess so.
Q As a matter of fact, Waters & Kraus, didn't one of their attorneys try to get you to testify -- try to put your name up so you could testify before Congress to give you some more credibility?
A Yes.
Q And did Congress ask you to testify?
A On another occasion, yes, but not on that occasion.
Q On the occasion that Congress asked you to testify --

so you went down to Washington, D.C., and sat in front of a -- sat in front of a committee in Washington, D.C., and held up your hand, and went under oath, and talked to some congressmen?

A Not quite. It was a subcommittee. And subcommittees travel. And this one was in Trenton, New Jersey, the capital of New Jersey.

Q So in this one, you testified in a -- you never made it before the full committee. You were in Trenton?

A I testified in Trenton before a subcommittee of Congress. That's how they do their business.

Q And with regards --

A When they do it. When they do any business.

Q With regards to the articles that Mr. Panatier was looking at, I believe in it -- how many of these articles -- when was the last time you published an article?

A Well, I'm not a researcher anymore. So my last published article was in 1987.

Q Okay. When you say you're not a researcher -- so what does that mean, you're not a researcher anymore?

A I don't do research. I voluntarily left Dr. Selikoff's laboratory after a while and started my practice.

Q And on your CV, it says clinical assistant professor,

division of environmental sciences, Mount Sinai since 1983?

A Yes, sir.

Q That's an unpaid volunteer position?

A Correct. It's an unpaid faculty position.

Q Well, you volunteered to -- they didn't ask you. You asked them if you could do it; right?

A At this point, I don't remember.

Q Now, you consider Dr. Selikoff to be one of -- one of the leaders in the writings about asbestos; right?

A I do.

Q And Dr. Selikoff became famous because he did research on a bunch of insulators. It was the insulator workers union; correct?

A He started with insulators --

Q That was his first --

A Sorry. He started with insulators. And he did a lot of research involving insulators, but then he, also, broadened out.

Q And I think it was like over 12,000 insulators?

A That what?

Q In the first study, in the first that he worked with?

A No. No, sir.

Q How many -- he had a big one, didn't he, that was like 12,000?

A No, sir. I mean --
Q How --
A -- you're not getting the numbers right.
Q I'm asking you. What were the numbers?
A So the first study was just the New York and New Jersey insulators. I think it was about 1,100 insulators.
God bless you, ma'am.
About 1,100 insulators. And then he did the big study, and it was about 17,000 --
Q I'm sorry. It was 17,000.
A It --
Q It was a large number. And that was the first epidemiologic -- that was the first time anyone linked a specific product to a disease; right?
A No.
Q When was -- let me ask you this. That was the first epidemiologic study that linked a specific product to causing an asbestos-related disease; correct?
A No.
Q What was the first one?
A The first one was Merewether and Price, 1930, asbestos textiles and asbestosis.
Q Okay. That was a poor question. Because when you're talking about asbestos textiles -- I don't know if the jury understands what that means. That's where you take

the raw asbestos and you weave it into a textile; right?
A Yes.
Q And then that textile is used for -- normally, put in another type of product; right?
A Yes.
Q So Dr. Selikoff's study was the first one that he, actually, used an end product that would normally be used by someone not in the manufacturing process?
A Well, the textiles were not always end products either. The textiles is something that they used to make brakes with, by way of example.
Q Yeah. They put it in brakes.
A Yeah.
Q And brakes are the end product.
A And people worked with those. And in the 1930s, it was noted that people --
Q Let me ask a different question. I'm sorry.
A Okay.
Q It was an inartful question on my part.
A Sorry.
Q Dr. Selikoff's work with insulators was the first time that anyone had linked the use of thermal insulation to lung cancer; right?
A I don't, actually, recall. Because the Lynch and Smith case from right here in South Carolina, I don't

recall what -- in 1935, I don't recall what the person's trade had been. I can tell you that there were -- there were definitely -- among the 70 case histories, 70-plus case histories that came before the 1955 study by Dr. Doll showing a connection between asbestos exposure and lung cancer, many of those were insulators. I can't give you the exact number, but I know that some of them were.

Q Okay. But it was always -- it was insulation. It was insulation that was causing these in the case reports that you mentioned; right?

A It was insulation. But I'm not saying every case was insulation.

Q Do you recall any -- any articles in the medical literature, be it a case report, prior to 1970, which linked the use of gaskets directly to any disease?

A Well, I recall Merewether and Price in 1932 saying gaskets -- jointings, that is, as they called it -- and packings would be hazardous. But do I recall an actual case report in the 1930s having to do with gaskets? No.

Q Or in the '40s?

A No.

Q Or in the '50s?

A Well, we do know that in 1964, Hueper was warning against that again in 1964 in this conference organized by Dr. Selikoff. What was his basis of experience for that?

I don't know.
Q Well, that's in the '60s. I asked about the '50s. In the '50s, there wasn't anything?
A If I went and searched, I don't know what I would find. I don't recall any offhand.
Q In the '60s, do you recall any offhand?
A Of gaskets?
Q Uh-huh.
A Gaskets -- actual case history of someone sick from gaskets. Part of the problem here is that just like Mr. Seay -- if someone just like Mr. Seay was reported in a case history, they would be more likely to say, oh, this person was exposed to insulation, instead of saying this person was a gasket worker. Because most people who were gasket workers and have exposure to asbestos from gaskets, also, had exposure to asbestos in other ways, too.
Q One of the reasons, when you pointed out that he would be listed as someone who was exposed to insulation, is because that is looked upon as a -- why is that? Why would they leave out the gaskets and report it as an insulation exposure?
A For the reasons we put up on those flip charts, that, typically, the exposures to insulation are higher. But if what a person does all day is gasket work and only from time to time has insulation exposure, then their exposure

from the gasket work is going to be higher over the course of time.

Q Right. But you haven't seen any of those reports; right?

A That's correct. I just -- I -- I could go searching, but I don't recall.

Q Well, as you sit here today to tell the jury about the -- to tell the jury about your expertise in preventive medicine and occupational medicine -- and you knew you were going to be talking about state of the art; right?

A I did.

Q And so you came here prepared to tell the jury about the state of the art?

A Yes, I did.

Q Okay.

THE COURT: All right. We're going to take about a 10-minute break.

(WHEREUPON, the jury was excused from open court at approximately 3:34 p.m.)

THE COURT: You can bring the jury back in, ma'am. Thank you.

(WHEREUPON, the jury came into open court at approximately 3:52 p.m.)

THE COURT: All right. Yes, sir.

MR. TIVIN: May it please the Court.

THE COURT: You may continue.

BY MR. TIVIN:

Q Dr. Holstein, you -- I've been kind of going backwards through your testimony. In the beginning of your testimony, you talked about the state of the art; right?

A Yes, sir.

Q And the state of the art is who knew what when, and who should have known what when, and whatever; right?

A Yes, sir.

Q Now, you would agree with me that in the 1800s, that there wasn't any Google?

A Yes.

Q And in the 1920s, it was really hard to look things up on the Internet?

A It was impossible.

Q And in the 1940s, you couldn't text your doctor and get your questions answered?

A Correct.

Q My point, obviously, is when you look back at the '30s and '40s, there was a lot of different ways of communicating between people; right?

A Yes.

Q There wasn't any way back in the '30s, '40s, '50s, or even '60s for anyone to get on the Internet and look at

things?
A I agree.
Q It's hard to imagine that, you know, 10, 15 years ago, in this century, it wouldn't have been uncommon for someone not to have a cell phone?
A I agree.
Q And, now, if someone doesn't have a cell phone, they're looked upon as like you're some Neanderthal?
A Well, I don't, but somebody might. The fight these days is to get your kids to put them down for a minute.
Q But the point is -- and then with the cell phones and the smartphones, everyone -- we are living now in an age of instant information?
A Correct.
Q And back in the 1800s, there wasn't instant information?
A I agree.
Q And back in the 1930s, there wasn't instant information?
A Unless you're face to face with a person, but I agree in general.
Q If someone did -- someone is over in England and someone is over in America, they might not find out about it for weeks or months?
A I agree.

Q And one of the articles -- one of the journals that you talked about was JAMA, the Journal of the American Medical Association?
A Yes.
Q And you testified that the Journal of the American Medical Association was one of the largest journals out there, right?
A Correct.
Q And that's one of the ones that you -- you would expect doctors to know about -- sorry -- I thought you wrote something down, but you didn't -- something you thought doctors would know about in America?
A Well, it's published in America. The answer is yes.
Q So you would expect a doctor in America to be more familiar -- if something was published in JAMA, you would expect them to know about it -- a better chance of them knowing about it than if it was published somewhere else, right?
A Widely read, so I guess the answer is yes.
Q Now, you testified earlier about a -- there were articles in JAMA in the 1940s that talked about asbestos?
A Correct.
Q And that's one of the things that you thought put people on notice that asbestos caused a lot of problems?
A Yes.

Q Now, I've -- you already have it in front of you. Here is an article from October of 1965. Do you see that?
A Yes.
Q And it says JAMA right there. That's the one we've been talking about, Journal of American Medical Association?
A Yes, sir. That's correct.
Q Okay. And this is an article that's written by these guys, a bunch of doctors?
A Yes. That's right.
Q They're a bunch of doctors. And these doctors -- let's go back -- I'm sorry -- Go back down to the bottom again.

These doctors are from the University of Pennsylvania?
A Correct.
Q And the University of Pennsylvania is a well-respected medical school?
A That's right.
Q And it's in the Ivy League?
A It is.
Q You mentioned you went to Harvard, Penn is in the Ivy League, too, right?
A Yes, it is.
Q And these are the sorts of people that you would

expect to read JAMA and keep up with things; right?
A Yes.
Q Well, if we go to -- this is what's called a case report. And a case report is when a doctor does -- sees either -- well, let's do it the easy way.
What's a case report?
A Well, we described it to the jury before. It's where a doctor, a scientist, publishes something that seems a little unusual, a little peculiar, not previously noticed, because it seems like it's -- may be worthy of further notice.
Q And some case reports are when doctors have brand new treatments and they're like, hey, this treatment may work. And so they try to get it published so other doctors can look at the treatment and say, maybe this is something I could try in this situation?
A Correct.
Q In the Journal of the American Medical Association, when they publish these case reports, there is some sort of screening process. They don't just publish anything you send to them; right?
A Correct.
Q So it has to -- you would assume that it has to be okay with the editors of the magazine before they put it in the magazine?

A It has to be considered worthy of notice.
Q Okay.
A It has to be considered of interest. And it has to be considered reliable.
Q So this article -- so they would have said that pleurectomy in 1965 was worthy of notice and reliable for it to be a preliminary report to be in the -- in their magazine?
A A pleurectomy for the particular purpose that it was being done in this case.
Q Right. And this was to tell the -- tell people about a brand-new treatment that they were putting forth?
A That's right.
Q Right. And let's -- this is a girl who had heart problems; right?
A By that time, she was -- well, yes. The answer is yes.
Q She had a heart problem. She had something called systemic pulmonary anastomosis; right?
A Yes.
Q So what these doctors did is they're like we want to try and help her. So in 1860 -- 1964, they did a pleurectomy on the right side and the surface of the lung was sprinkled with powdered asbestos.
Doctor, did I read that correctly?

A You did.
Q So, in 1965, the editors of the Journal of the American Medical Association thought that sprinkling powdered asbestos directly on somebody's lungs was reliable and worthy of notice?
A Well, they thought that this article was reliable and worthy of notice. They were not passing judgment on whether this was the right treatment for somebody.
Q Well, if they thought it was the wrong treatment, do you really think they'd publish it in the magazine? Isn't that the sort of thing that they wouldn't publish?
A Well, the fact is that the doctor -- I don't want to quibble about this. The judgment that's being exerted here is by the doctors who did this procedure. The editors at the journal are just figuring out, is this something that other doctors are going to want to read about?
Q And my point is this, in 1965, it's difficult for information to get -- information might not have been as here to there as we've been kind of talking about. And some editors in the Journal of the American Medical Association thought it was okay to sprinkle asbestos on someone's lungs. I'm not saying it's a good idea. But I'm saying, in 1965, they didn't know it was a bad idea.
A They're not passing judgment on whether that's a good

idea or a bad idea.

Q Well, it's your testimony here that if they thought it was a bad idea, they would -- why would they have published it if it was a bad idea, unless the article said like don't do this?

A I don't -- I'm sort of feeling forced to quibble on something that's not so important. I'm ready to acknowledge that the doctors who did this procedure thought it was the best thing for this girl who was dying. And I don't have any comment -- or very little comment about what the editors of the journal were thinking.

Q Okay. Now, you, also, testified about the EPA, didn't you? You were asked a question about the EPA?

A Well, wait a minute. I didn't finish my answer.

Q Oh, I'm sorry. I thought you were done.

A So this was a desperately ill girl who had already had one major heart surgery when she was a one-year-old baby, and now was falling back into a life-threatening situation. And, in medicine, we do many things that are drastic when somebody's life is at stake. We give them poisons called chemotherapy. We do gigantic operations that in some cases leave them in some manner crippled. So it's a cost-benefit balance.

And these doctors felt that the risks for this girl of not doing this were outweighed by -- in other words,

she was in a desperate situation. When we have a desperate situation, you do desperate things.

Q Well, you don't know who any of those doctors are; right?

A No. I don't know them.

Q And so you have no idea what was going through their minds when they came up with this?

A I agree, but you don't either.

Q Right. I --

A There's no indication in here that they didn't know that asbestos was hazardous. There's no indication that they were ignorant of the health effects of asbestos. There's no indication one way or the other.

So you're right. I don't know what was in their mind. But you don't either. They may have been perfectly well aware of the hazards of asbestos, but concluded that this girl's life needed to be saved right here and now.

Q And you read the article before you got on -- you read the article during a break?

A I've seen it in the past.

Q Okay.

A But it's been a long time since I've seen it.

Q You've seen it in the past. Is -- anywhere in the article, does it say any of that stuff?

A It does say -- it says nothing about the state of

knowledge about asbestos one way or the other.
Q Right.
Now, did I just hand you another article or did I --
A I don't think so.
MR. TIVIN: Did I hand it to you?
MR. PANATIER: I've been highlighting it, but you can have it.
BY MR. TIVIN:
Q You talked about -- we'll get back. You talked about the EPA; right?
A Yes. I did talk about the EPA.
Q Okay. I'm going to hand you an article -- a brochure from the EPA.
Now, first of all, the EPA, are they the ones that talk about -- you talked about -- have -- strike that.
There's a -- you're aware that there's a clearance rate for asbestos in schools; right?
A That there's what?
Q You talked about asbestos in schools.
A A clearance rate? Is that what you said?
Q Right. You talked about asbestos in schools; right?
A Yes.
Q And you were talking about throwing the pencil in the ceiling, I think?
A I did.

Q You would agree with me that the EPA has said that children are allowed back in a school if there is .01 fibers per cc of asbestos?
A Correct.
Q And then --
A No more than .01.
Q That .01 would be, what, a hundred times your background number, or a thousand?
A It would be, at least, a thousand.
Q So the EPA thinks that the -- that it's okay to send your kids into a school if it's a thousand times above background; right?
A No. I wouldn't put it that way.
Q Okay. The EPA allows children back into a school in it's a thousand times above your background; right?
A Well, the alternative is to tear down hundreds of thousands of school buildings all over the country. And the questions is, what's worse for kids? To allow them into a school that may be as high as up to .01 fibers per cc, or to have no schools?
Q Okay. Now, this is something that was written in the summer of 1994. Do you see that in the upper right?
A I do.
Q And it says, Asbestos in America?
A Yes.

Q Can you read the first sentence out loud, please?
A I'm sorry. Which page?
Q The one that says, Asbestos in America on it. You can read it off the screen if you want, but I think it's the last page.
A Okay. Asbestos in America. What would you like me to do?
Q Read the first sentence.
A Prior to 1970 --
Q Wait a minute. Read the first sentence that was put out by the EPA in 1994.
A Prior to 1970, asbestos was considered nontoxic and used for fireproofing and to insulate homes, office buildings, and schools.
Q Thanks.
A You're welcome.
Q And, finally, this is the book I believe we discussed with Dr. Brody yesterday. It's called, Asbestos and Disease.
A Yes.
Q Are you familiar with this book?
A To some degree, yes.
Q And it's -- Dr. Selikoff is one of the editors?
A Yes.
Q And you consider him an authoritative author?

A I do.
Q You consider that he's one of the -- he was one of the leaders in asbestos medicine?
A Yes, he was.
Q And when he published -- you considered it to be at the forefront of asbestos medicine when he published it?
A Not always, but often.
Q Now, this book was published in 1978?
A Yes.
Q I can show you if you --
A No. I believe you.
Q Okay.
A I was with Dr. -- I mean, I was part of Dr. Selikoff's department when it was published.
Q And there's a preface that's written by Irving Selikoff and Douglas H.K. Lee; right?
A Yes.
Q And Douglas H.K. Lee was the coeditor; right?
A Correct.
Q And in the preface -- have you -- I'll show it to you. I don't -- or do you want me to put it on the screen? Either way is --
A It's your call. Do whatever you want to do.
Q We'll put it on the screen.
Here's the preface. That -- you would agree that's

the preface?
A I do.
Q Starting the second paragraph, In 1978 -- this is where he writes -- he wrote, The time has come when such a comprehensive review of disease caused by exposure to asbestos is not really possible, but badly needed; right?
A Yes.
Q With the number of articles on the subject in the world literature at about 3,000, it is manifestly absurd to expect every person who has some responsibility for or interest in disease prevention to be familiar with all the aspects covered, or to be forced to resolve many of the conflicting views presented.
That's what it says?
A Yes.
Q And then he wrote, Even those who have expert knowledge of one aspect, be it clinical effects or engineering control, may well need guidance on other aspects; right?
A Yes. That's what it says.
Q And that's what he wrote in 1978 for the preface for his book; right?
A Correct.
Q Now, in the book, there's, also, a section -- and I know you've seen this before -- on progress and

introducing substitutes for asbestos-containing materials; right?

A Specified by the Navy department.

Q Right. Okay.

A Yeah.

Q Is that what it says?

A Yes. That's what it says.

Q And on the second page, it says, High-temperatures jointing and packing materials?

A Yes, it does.

Q And that's the jointing -- you mentioned jointing. That was what the English called gaskets?

A Correct.

Q And it says, with regards to -- in 1978, the year that it was published -- this -- strike that.

When the book was published in 1978, the chart that is contained within the book says, No health hazard in forms used in shipyard applications.

That's what it says; right?

A That's what it says.

Q And is there any difference -- can you think of any difference in the way a gasket would be used in a shipyard and the way it would be used in a polyester plant?

A It would be pretty similar in most respects.

MR. TIVIN: Thank you, sir.

Pass the witness.

THE WITNESS: Thank you.

THE COURT: Yes, sir. Mr. Young.

MR. YOUNG: Thank you, Your Honor.

CROSS-EXAMINATION

BY MR. YOUNG:

Q Dr. Holstein, it seems like it's been 34 years since you started this morning, but I'm going to try to get you out of here. You know I'm Lane Young, correct?

A Yes, you are.

Q We've met before.

A Yes.

Q And it's been a while.

A It's been a while, but we've met before.

Q Okay. I'm going to shift gears on you a little bit here. And I want to ask you some questions that are going to involve Daniel Construction Company. Okay.

A Yes, sir.

Q Mr. Seay's employer.

A Yes, sir.

Q You looked at some stuff about the facts of this case in addition to the medical records and things, right?

A I looked at --

Q -- you looked at some depositions?

A I'm sorry.

Q Sorry.
A I thought you were done. I'm sorry.
Q I talk slower than everybody else. I apologize.
A I talk too fast sometimes.
Q But you looked at some depositions and things; correct?
A I did.
Q Okay. And so you are knowledgeable that the Celanese plant that's involved in this case, they were making polyester fiber; correct?
A Yes.
Q Not asbestos products?
A Correct.
Q Okay. And we know -- the ladies and gentlemen of the jury know this, but -- that Mr. Seay, he was working for Daniel, not Celanese; correct?
A Correct.
Q Okay. The whole time that we're dealing with here?
A He was working for Daniels on Celanese premises.
Q Right.
A Yes.
Q And Celanese employees were making the polyester fiber. And Mr. Seay and the large number of Daniel employees there, they were doing maintenance work on the plant; correct?

A Yes.
Q Okay. And the maintenance work on the plant is what involved the asbestos products that we've heard about all day; correct?
A Yes, sir. That's correct.
Q Okay. And you indicated earlier this morning that you had not ever talked to Mr. Seay before he passed away; is that correct?
A Correct.
Q Okay. And you, also, hadn't talked to any of his coworkers; is that right?
A That's, also, correct.
Q Okay. And you haven't made any investigation to talk to any Daniel employees about what went on out there at Celanese in the '70s; correct?
A I have not done any independent investigation.
Q Okay. To find out, for example, what programs Daniel did or did not have in effect to make sure their workers had a safe workplace. You haven't investigated that; right?
A Nothing beyond the testimony of Mr. Thompson and Mr. Seay.
Q Do you know who Don Buck is?
A It escapes me.
Q Okay. Well, the ladies and gentlemen of the jury

will hear from him next week. But I want you to assume for the purposes of this question that Mr. Buck works for Daniel. All right.

A Okay.

Q And I want you to assume that he's going to testify in this case, and has testified, that Daniel had a duty and an obligation to provide Mr. Seay safe workplace at Celanese. You would agree with that; right?

A I do.

Q Okay. I think you told us -- you may -- let me hurry up so we can get out of here.

We've pretty much come to an agreement that, according to the social security records, Mr. Seay started work at Celanese for Daniel in mid to late '71; right?

A Well, I never saw those social security records, but I'll take your word for it.

Q Okay. Just assume that's true for me. Will you do that?

A Certainly.

Q Okay. And so it would be fair to tell the ladies and gentlemen of the jury that if he started in mid to late '71 and worked until '78 or thereabouts, that, essentially, the whole time he was there, OSHA was in effect. Do you agree with that?

A Basically, true.

Q Okay. I mean --
A It was just coming into existence when he went to work at -- at Daniels -- is it Daniel or Daniels?
Q Daniel.
A Daniel.
Q Now, it's Fluor Daniel, but it's Daniel.
A So he went to work for Daniel on the Celanese premises right around the same time that OSHA was coming into existence.
Q Okay. And I think you told us earlier that it's your understanding that Daniel had built a number of fiber plants and other plants during their existence. Do you recall that?
A I don't.
Q Not today, but in your deposition.
A Oh, I don't recall that at all.
Q Okay. Well, you don't have any information for us that Daniel was not a large and well-respected construction company in the 1970s, do you?
A I have no idea whether it was well respected or not. I do -- I do conclude indirectly that it was fairly large.
Q Okay. And Daniel was Mr. Seay's employer the whole time that we're dealing with; right?
A That's my understanding, yes, sir.
Q Okay. And we can agree that Daniel was obligated by

OSHA to provide a safe workplace to Mr. Seay at Celanese; correct?

A Yes.

Q And we can agree that, under OSHA, Daniel had the responsibility -- primary responsibility for Mr. Seay's safety while he was working at Celanese; correct?

A OSHA -- OSHA recognized that there were complex situations where employees of one company would be working on the premises of other companies, and understood that there -- that that would create joint responsibility for safety.

Just as, for instance, a lineman works for a public utility, but might be on public property, might be on private property. And in those cases, the safety of that person is a joint responsibility.

Q Okay. But you agree with me that under OSHA, Daniel had a responsibility to provide Mr. Seay a safe workplace while he was at Celanese; correct?

A I would phrase it differently. I would say that the acts of Congress that created OSHA gave OSHA the right to enact rules and regulations for employers much more than for anybody else.

Q Okay.

A So they had limited legal powers when it came to other parties besides employers.

Q If there was an OSHA violation that involved some work Daniel was doing while they were at Celanese from '71 to '78, Daniel would be responsible for that fine; right?
A For the fine?
Q Yes.
A That -- I don't know one way or the other.
Q Okay. And it would be fair to say that under OSHA, Daniel had an obligation to warn Mr. Seay about the dangers of asbestos; correct?
A Under OSHA, it did. But it did not -- it was not the only one to have such a responsibility.
Q And we can agree, can we not, that if Daniel had followed the regulatory scheme established by OSHA, including what -- the things that you talked about earlier this morning, elimination, substitution, changing work practices, and protection, then Mr. Seay's risk of contracting mesothelioma would have been significantly reduced; correct?
A I agree.
Q And you told the ladies and gentlemen of the jury earlier about your work at Port Allegany; correct?
A I did.
Q Okay. And you were helping the employers out there to make sure there was a safe workplace and people weren't getting sick; right?

A No. I was trying to deal with the aftermath of the exposures to asbestos after those had stopped.
Q Okay. You didn't see anything in the information you read that Daniel had told Mr. Seay about any of the OSHA requirements in effect while he was there; correct?
A With regard to asbestos, that's correct.
Q Okay. And you didn't see anything in any of the information that you've looked at that indicated that Mr. Seay had been provided a respirator to wear by Daniel when he was in the vicinity of the insulation work we talked about a lot today; correct?
A I agree.
Q You had talked to the ladies and gentlemen of the jury some about OSHA earlier today. Do you recall that?
A I do.
MR. YOUNG: Sorry, Your Honor. I tried to learn how to use this during the break.
BY MR. YOUNG:
Q And this is the 1972 OSHA. Do you see that? You're familiar with this; correct?
A I am.
Q And it would be correct that it says, Establishment of a respiratory -- respirator program. The employer shall establish a respirator program in accordance with the requirements of the American National Standards

Practice, et cetera; correct?
A Under certain circumstances, that would be the requirement, yes.
Q Okay. And you're not able to tell us that you saw anything in this case that indicated that Daniel had established a respirator program for Mr. Seay while he was there; correct?
A I -- some of those questions, I did not see answered. But to the extent that there were such questions, I agree with you.
Q Okay. And, of course, you haven't talked to anybody at Daniel, so you don't know what they would say; correct?
A Only Mr. Thompson and Mr. Seay.
Q And then look down here. Do you see where it says Monitoring?
A I do.
Q Within six months of the publication of this section, every employer shall cause every place of employment where asbestos fibers are released to be monitored in such a way as to determine whether every employee's exposure to asbestos fibers is below the limits prescribed in paragraph B of this section. If the limits are exceeded, the employer shall immediately undertake compliance program.
And the employer in our situation, Dr. Holstein,

would be Daniel; correct?
A Yes.
Q All right. And it goes on and it talks about notification to the employees, The employer should provide medical exams. The employer should provide changing rooms, all sorts of things; right?
A Yes.
Q That the employer is supposed to do as of June 7th, 1972, to make sure that Mr. Seay has a safe workplace insofar as asbestos is concerned; correct?
A Yes, sir.
Q Okay. And as I understand it, you're not in a position to say what Daniel did and what Daniel didn't do; correct?
A Well, from Mr. Thompson and Mr. Seay, I have the impression that Daniel did few of those things.
Q On direct examination this morning, you said -- I want to make sure that you agree that I wrote this down right -- Your supervisor should warn you about dangers on the job, including asbestos. Is that what you said?
A What I said?
Q Yes.
A I don't know whether I meant -- whether I singled out supervisors or not. I did -- I would, certainly, have said that those in authority should -- should give those

warnings.
Q All right. And --
A But I -- well, okay. That's --
Q Go ahead.
A That's, basically, my answer.
Q Okay. And in this situation, Mr. Seay's supervisor would have been a Daniel employee; correct?
A Yes. Well, but, also, he had -- he testified that their daily work orders came from a super who came from Hoechst Celanese, and another person I think he called maybe a planner or something from Daniel. The two of them would get together every morning. And then the orders would come down as to what they were going to do that day.
Q All right. But then Daniel was in charge of how it was done; right?
A Daniel was in charge of how it would be done, but the orders came down from both companies.
Q And you saw, from what you reviewed in this case, that the construction contract between Daniel and Celanese required Daniel to comply with OSHA; right? Correct?
A I never saw the construction contract.
Q Okay. So you don't recall testifying about that?
A I don't think I did. Because I didn't see the construction --
Q It would not be --

A -- the construction contract.
Q It would not be unusual for a contract like that to require compliance with OSHA; correct?
A Based on the ones I've seen, I agree.
Q Okay. And you talked about Merewether and Price early on in your testimony?
A I did.
Q Do you recall that?
A Yes, sir.
Q And the recommendations that they made about how to more safely use and work with asbestos. Do you remember that?
A Yes, sir, I do.
Q Okay. The watering down, ventilation, respirators, that type of stuff?
A Yes, sir.
Q Okay. And I can't add in my head. But, in 1971, essentially, what happened is OSHA codified and made into a rule or regulation that the government could enforce a lot of the same stuff; right?
A Yes.
Q Okay. If you work with insulation, you need ventilation. Working with a dusty product, wet it down. If you're worried about whether there's asbestos hazard, have a respirator program. I mean, a lot of the exact

same things that had been talked about before; correct?
A I agree.
Q Okay. And we can, certainly, agree that all that's the kind of stuff that Daniel should have been doing every day to make sure that Mr. Seay had a safe workplace under OSHA from an asbestos standpoint; correct?
A Some of them, they should have been doing.
Q It was obvious from what you looked at that Daniel was working with thermal insulation; correct?
A Yes.
Q Okay. And, certainly, Daniel could have implemented a respirator program and required Mr. Seay to wear a respirator; correct?
A I don't -- I didn't see any reason why not. But I didn't know all the facts concerning Daniel.
Q And, certainly, we can agree that under OSHA, if Mr. Seay was either fabricating or working with asbestos-containing thermal insulation or in the vicinity where that work was being done, that proper precautions under OSHA should have been implemented by Daniel to protect him --
A Yes, sir --
Q -- right?
A -- I have agreed with that.
MR. YOUNG: Okay. Thank you, Dr. Holstein.

Your Honor, that's all the questions I have.

THE WITNESS: Thank you, sir.

THE COURT: Mr. Panatier.

MR. PANATIER: Thank you, Your Honor.

(Pause.)

MR. PANATIER: I'm not going to hit it again.

THE WITNESS: That's how I fix things. I just keep hitting them.

MR. PANATIER: I screwed up again. Hold on. One -- one click?

THE WITNESS: If that doesn't work, you kick it.

MR. PANATIER: Yeah. Let's see if the old unplug-and-replug works.

MR. TIVIN: I was expressly told not to just keep hitting the button.

MR. PANATIER: Hey. Look, it says, Additional Issues.

REDIRECT EXAMINATION

BY MR. PANATIER:

Q Okay. So we're going to talk about some additional issues, but let's back up.

All right. So I want to ask you first about some of the questions that Mr. Tivin asked you about Ronnie Thompson. Okay.

A Okay.

Q So we're going to back up a little bit. And you were shown this section of his testimony. The question was, So you would have had to remove these gaskets from pumps?

So, first of all, we know they're talking about pumps; right?

A Correct.

Q Now, was there a variety of equipment that these guys worked on, not just pumps?

A Yes.

Q Okay. So for the question they're talking about, can you estimate how many -- the percentage of time that the gaskets would not just come out of a pump easily, that he had to use the putty knife and the wire brush?

Now, it's kind of a convoluted sentence. But he says, 25 percent of the time they wouldn't come out easily; right?

A That's what it seems to say, yes.

Q But then the follow-up question is, I mean, it was a lot. I mean, it was a lot.

And he says, Yeah, it was a lot.

Okay. So he says 25 percent is a lot. 75 percent would be the other side of 25 percent; right?

A Correct.

Q Okay. Let's compare that with what Mr. Seay said.

He was shown this picture. And the jury saw this testimony.

Could you take a look at that, sir?

Yes. That's -- that's a good example of what 90 percent of your gaskets look like when you're replacing them.

Right?

A Yes.

Q So -- and what are we looking at there?

A We are looking at a corroded, baked-on gasket on a flange.

Q Is that the type of gasket that would just fall out?

A Not at all.

Q Is that the type of gasket that a worker would have to scrape, wire brush, and potentially power wire brush off?

A Absolutely. You have to get that metal face clean, spic-and-span clean, or the next one is going to leak.

Q Okay. And if what Mr. Thompson really meant was this only happened 25 percent of the time, then, perhaps, these guys were working at different plants?

A Right. Right.

Q Okay. Now, there are factors you have to consider to determine how much asbestos is released from a gasket, right?

A Yes.
Q Mr. Tivin spent time talking to you about some studies that showed lower levels, and some studies that showed higher levels; right?
A Yes.
Q One of the studies he showed you was a study by Fred Boelter. Do you recall that?
A Correct. Yes, I do.
Q And this is that study right here?
A Yes.
Q And in the bottom corner, you can see, This project is funded by Coltec Industries. Do you recall who they are?
A Coltec. No, I don't.
Q The parent company of Garlock. Do you know who Garlock is?
A Yes. Oh, I know what Colt Industries was --
Q Okay.
A -- but this is Coltec. Okay. Yes, the parent company of Garlock, one of the leading gasket manufacturers.
Q And you understand that Mr. Boelter testified for Garlock in gasket litigation?
A Yes, I do.
Q All right. So we'll take that into consideration.

Now, the types of things that influence how much dust comes off of a gasket may include how adhered to the flange it is; right?

A Correct.

Q Some of them might have been in cold water service, maybe they weren't in for a long time, maybe there was low pressure, and they don't stick as much?

A Correct.

MR. TIVIN: I would just object to the leading.

THE COURT: Sustained.

BY MR. PANATIER:

Q Others, based on other types of scenarios, it's possible would stick more; is that fair?

A I agree.

Q Okay. In what types of scenarios would they stick more?

A Higher temperature, higher pressure, they were in service long -- for a longer period of time. Those would be the major factors. Also, when they first apply them, sometimes they put a nonstick substance on the -- on the gaskets. I don't think they -- it worked that well, but that could be a factor. I've identified the major factors.

Q Mr. Seay is not identifying gaskets that just fell out of the flange; correct?

A At what point?
Q When he was working.
A Oh, absolutely not -- not in response to that picture that you showed that he saw.
Q So what I want to show you is -- I want to show you -- because I have the pictures of what Fred Boelter's gaskets look like, that he was, actually, pulling off of these flanges. So I want to just ask you --
MR. TIVIN: Just objection to the foundation before you show the picture. If it's in the article, that's fine. If you want to show something else, I --
MR. PANATIER: I'm presenting it to him. I'm going to ask him if these are the types of gaskets that you would expect to be cooked on or not. And then ask him the follow-up questions and whether or not you'd have to use mechanical energy to get them off.
MR. TIVIN: There's still a foundation that has to be laid that these are the gaskets in Boelter's study, which is what he was representing.
MR. PANATIER: I'm, obviously, presenting this as a hypothetical to assume that these are those gaskets.
THE COURT: All right. Overruled.
BY MR. PANATIER:
Q Okay. So these are the gaskets that Boelter took out. And there's the --

MR. TIVIN: I object, Your Honor, that this is -- objection.

MR. PANATIER: That's the folder they were in, Your Honor. I'm just demonstrating that's what they came out of.

THE COURT: Well, let me ask y'all up here something real quick.

THE WITNESS: Your Honor, may I quickly go to the men's room while you have this sidebar?

THE COURT: Yes.

Well, why don't we take just about a five-minute break so we can let everybody get comfortable.

Go ahead.

Don't talk about the case. Continue to keep an open mind.

(WHEREUPON, the jury was excused from open court at approximately 4:35 p.m.)

THE COURT: We'll take a break.

(WHEREUPON, a break was taken.)

THE COURT: We can bring the jury back in.

Thank you.

(WHEREUPON, the jury came into open court at approximately 4:42 p.m.)

THE COURT: All right. Yes, sir. You may continue.

MR. PANATIER: All right. Thank you.

BY MR. PANATIER:

Q To finish up this gasket issue, if a gasket falls right out of the flange, generally speaking, or is not stuck to the flange, compared to one that is stuck to the flange, which one is going to take more work to get off?

A The one that's stuck.

Q Okay. Now, you were -- you were asked about this article about -- it was a case report where some doctors said, here's what we did for a little girl who had an extreme medical condition; right?

A Correct.

Q And they -- they, actually, sprinkled powdered asbestos on her -- was it on her pleura or --

A On her lung.

Q On her lung?

A Yes.

Q And it was for a heart condition; right?

A Yes.

Q Okay. Anytime doctors do new and novel things and they think it's interesting, a lot of time they submit it to journals, 'right?

A Correct.

Q Do the journals rubber stamp them and say, we think this works, or what are they doing?

A They're just figuring out, are these reputable people

and is this of interest to our readers?

Q Okay. And, in fact, as far as medicine goes, we do lots of things that, actually, cause harm to the body to -- but depending on the situation, we choose to do them because we might be able to help somebody; right?

A Of course.

Q That -- you brought up chemotherapy; right?

A Yes.

Q And, in fact, in this case, Mr. Seay had talc injected into his chest -- chest area; right?

A Correct.

Q To prevent the liquid from building back up; true?

A Yes.

Q You would not do that unless there was an extreme scenario; right?

A Exactly.

Q You were asked again about the Selikoff and Lee book. Okay. I'm not going to open it up again. Do you remember this?

A I do.

Q We saw this yesterday. Now, you understand that John Crane was selling asbestos-containing gaskets; right?

A I do.

Q Okay. Who was in a better position in 1978, 1972, 1960 to test John Crane's gaskets to see what kind of

asbestos they released or what levels --

MR. TIVIN: Objection. Beyond the scope.

MR. PANATIER: Your Honor, I'm asking about this very -- Your Honor, I'm asking about --

THE COURT: Yes. Overruled.

BY MR. PANATIER:

Q Who was in a better position to test John Crane's gaskets in the '60s or '70s, Dr. Selikoff or John Crane?

A John Crane.

Q Are you aware that they did?

A No. I've never seen any data that they did.

Q Okay. Moving on to the issue of Mr. Seay's employer, Daniel and Celanese. Okay.

A Yes.

Q Now, you testified, look, Daniel could have done much more for Mr. Seay; right?

A I did, yes.

Q And you talked about the fact that Celanese -- there's a shared responsibility for worker safety; right?

A Correct.

Q Okay. So here's a -- kind of the question area I want to ask you about, if Celanese had taken precautions for the asbestos they owned.

So you were asked, if Daniel had taken these precautions, could they have reduced the amount of

asbestos that Mr. Seay was exposed to? And you said yes; right?

A Correct.

Q If Celanese had had a policy that said, look, if you're a contractor and you're in an area where there's asbestos, leave that to us, would that have helped prevent his asbestos disease?

MR. YOUNG: Objection, Your Honor. Foundation. Beyond -- way beyond the scope.

THE COURT: Overruled.

THE WITNESS: Absolutely. It would have helped.

BY MR. PANATIER:

Q If Celanese had been -- well, and let me ask you. You saw where it said, All employers shall monitor all employees potentially exposed to asbestos. Do you recall seeing that?

A Yes.

Q That included Daniel; right?

A Correct.

Q And that included Celanese for anybody who was around while any asbestos was being worked on; right?

A True. Any of their people.

Q Right. Was there anything preventing Celanese, to your knowledge of the OSHA standard, for placing warning placards in areas where they knew they had purchased and

specified asbestos on the piping and equipment?

MR. YOUNG: Same objection, Your Honor. Foundation. Scope.

MR. PANATIER: Your Honor, he was cross-examined on these issues between Celanese and --

THE COURT: All right. Overruled.

THE WITNESS: No. Nothing at all prevented them from taking their own measures to protect their own employees and anybody else who might, also, benefit.

BY MR. PANATIER:

Q Okay. You're not under the impression that Celanese was ignorant that asbestos was in the plant, are you?

A No.

Q Okay. Now, I want you to assume that the contract said -- as Mr. Young pointed out, it did say that Daniel had to have a safety program and follow OSHA. Can you assume that?

A I'll assume that, yes.

Q Can you, also, assume that it said you have to follow the owner's safety rules, the owners being Celanese?

A I'll assume that, too.

Q Okay. So if the owners had safety rules pertaining to areas where asbestos is present, then that was something that Daniel could have addressed with their employees; fair?

MR. YOUNG: Same objection, Your Honor. Assumes facts. No foundation.

THE COURT: Overruled.

THE WITNESS: Yes. That's something Celanese could have insisted on, that Daniel follow its own -- follow its safety rules. Because that's what the contract said, according to what you asked me to assume.

BY MR. PANATIER:

Q All right. Last issue. You were asked about the -- this newsletter from the EPA in 1994?

A Yes.

Q Do you know who was writing this?

A This is a lay publication by its appearance. But I don't know who, actually, wrote it.

Q Okay. So it's a -- it's a mailer. In fact, it's a -- you can see it's -- it's got the little fold line where it can be mailed.

A And bulk-rate postage. Yes, I see that.

Q Okay. They have a sentence that says, Prior to 1970, asbestos was considered nontoxic; right?

A Yes.

Q This was prior to 1970; right?

A Yes.

Q Are you -- do you feel safe in telling this jury, under oath, that no one here concluded that asbestos is

simply nontoxic?
A I didn't follow the question. Too many negatives.
Q Yeah, there were.
Do you know -- let me just ask you. Do you know whether or not anyone in the Selikoff conference -- let's see -- six years prior to 1970 concluded asbestos was not toxic?
A There's no indication in that book that anybody had the opinion that asbestos is nontoxic.
Q In fact, as an occupational medicine doctor, what is the conclusion about asbestos being toxic or not that you draw from this conference that happened six years before 1970?
A That it's highly toxic.
Q All right. When OSHA made asbestos the number one substance they were going to address, was it because it was nontoxic?
MR. TIVIN: Objection. I'll sustain my -- why they did it or -- no foundation he knows why they did it.
MR. PANATIER: I can ask it in a different way.
THE COURT: Okay.
MR. PANATIER: I'll ask it in a different way.
BY MR. PANATIER:
Q From your knowledge of OSHA and its handling of asbestos -- first of all, have they ever said asbestos is

nontoxic?

A They've never said that ever in their existence.

Q And have you ever known OSHA in -- for any of the substances that you are aware that it regulates to pass an emergency standard for a nontoxic substance?

A Did they ever pass an emergency standard for a nontoxic substance?

Q To your knowledge.

A No. They only passed emergency standards for things that were serious, that were emergencies.

MR. PANATIER: No further questions.

THE WITNESS: Thank you, sir.

MR. TIVIN: Extremely brief, Your Honor.

RECROSS-EXAMINATION

BY MR. TIVIN:

Q Dr. Holstein, you were talking about the -- I'll stand up. I'm sorry.

Dr. Holstein, you were talking about the different things that can cause a gasket to adhere more. Do you remember that?

A Yes.

Q And you've talked about the -- what was going through the line; right? That's one thing?

A No. I talked about heat and pressure.

Q And time --

A So the heat depends in part on what's going through the line.
Q Heat, pressure, and time. We'll say there was three.
A Yes.
Q Do you know what the heat was on any of the lines that Mr. Seay worked on?
A All over the map, depending on what part of the process it was.
Q Do you know what any -- can you give me a range of the temperatures that were used in Celanese?
A No.
Q Okay. Do you know what the pressure was on any of those lines?
A Again, highly variable, depending on what the process was.
Q Can you give me a range? Do you know anything about it?
A No. I can't give you the numbers.
Q And, finally, do you know how long any of those gaskets were in in any of those Celanese plants?
A To some degree, yes. Because they had scheduled maintenance --
Q They had scheduled maintenance. But does that mean they would replace that gasket every single time they would shut down?

A Yes. That's for when they shut down --
Q So you're saying when they had a shutdown, they replaced every gasket in the plant?
A Every gasket in the part that they shut down.
Q Okay.
A No. Every gasket in the machinery that they worked on --
Q And --
A -- if they didn't work on the machinery, they didn't replace the gasket. If they worked on the machinery for any purpose whatsoever, they would replace the gasket during a shutdown.
Q Right. But you have no idea how -- what was the preventative maintenance schedule for any machine.
A I'm sorry.
Q You don't know what the preventative maintenance schedule was for any machine at the Celanese plant, do you?
A Well, the witnesses told us. They said that --
Q There was a shutdown every six months. But he didn't say what he was working on every six months. He just said there was a shutdown every six months.
A Yes. So --
Q So if you're saying at a shutdown, he worked on all the equipment in the plant, does that mean they -- gaskets

connect everything together; right?
A No.
Q Did they take the whole plant apart?
A No. They're saying there were shutdowns of certain lines and certain pieces of the operation every six months.
Q Right. But you don't know if pump A was being -- the preventative maintenance schedule for pump A. You have no idea?
A Well, I agree. But I know that pumps, and valves, and condensers, and vessels were being worked on during these shutdowns. And when that would happen, they'd be working on gaskets.
Q Right. But my point -- my point is you don't know the time between the preventative maintenance. You don't know -- you don't know how long a gasket was lasting -- any particular gasket was in there when Mr. Seay was working on it; right?
A They testified that there were total shutdowns every two to three years of an entire line. And that there were partial shutdowns every six months. And then there were, also, unscheduled breakdowns. And then there were just smaller repairs that had to be done.
Q Right. But you don't know what the time -- you don't know how old any particular gasket he worked on was;

right?
A Sure I do. If the preventive maintenance schedules --
Q Well, tell me, what was the length of time of the gasket that he worked on that he power wire-brushed on that he described in his -- in -- the first gasket that he described in his deposition that he power wire-brushed off, how old was that one?
A When they had preventive medicine --
Q No. My question is, how old was that one?
A But you interrupted me in my answer to your last one.
Q I withdraw that question. I'll ask you a new question.
How old was the first gasket that he replaced?
A I don't know.
Q How old was the second gasket that he replaced?
A I don't know. But I can darn sure tell you that some of those gaskets were stuck on. He testified --
Q I didn't ask about it being stuck on. I asked how old they were. And my point is, you don't know how old any of them were; right?
A I know the -- I know partial information on that.
Q But you can't say that they were two months -- you can't say if it was two weeks old or a year and a half old. You just don't know. None of us know because none

of us have the information; right?
A I disagree, sir.
Q And what information do you have that lets you know how old these gaskets were?
A Well, when they would do a shutdown of an entire line every two or three years, those gaskets, some of them would be -- would have been on there for two to three years.
Q Okay. So we know the oldest, it was two to three years. Some of them could have been emergency pieces of equipment. They could have done it the week before; right? You just don't know. My point is, there's not enough information to know.
A I disagree. And I've given my basis for disagreeing.
Q Okay. Do --
A And I don't know why we're quibbling over this at 5 minutes before 5:00. Because we have clear-cut testimony that some of the gaskets were stuck on and needed to be worked on.
Q I'm not asking about the gaskets being stuck on.
A Okay. Sorry.
Q I'm asking, do you know how old they were? You said that those are the three things you have to look at, the temperature, the pressure, and how old it was. And I'm just saying you don't know the temperature of any of the

lines. You don't know the pressure of any of the lines. And you don't know how old any of the lines were, right?

A I know some of them were darn hot. That's a technical term. And I know that some of them weren't so hot, which is another technical term.

Q So can you give me a range? I mean, do the darn hot ones bake on, or do the semi-hot ones bake them on?

A I can't give you numbers.

Q Okay. That's my point. You don't know any of the information that you said is important to determine if a gasket is going to bake on.

Thank you.

A Thank you, sir.

MR. PANATIER: Your Honor, may I just ask one follow-up?

MR. TIVIN: I'll withdraw the last question.

THE COURT: I'm not sure if it was a question or not. But go ahead.

MR. PANATIER: I'm sorry.

MR. YOUNG: I am going to be brief because I don't have any more questions. So --

THE COURT: Okay. Thank you, Mr. Young.

MR. YOUNG: I just didn't want to get left out.

MR. TIVIN: Are you going re-redirect now?

THE COURT: I think we did say that, there's no

re-redirect.

MR. PANATIER: Oh, okay.

May the witness be excused, Your Honor?

THE COURT: So thank you.

THE WITNESS: Thank you, Your Honor.

THE COURT: You're excused, sir.

THE WITNESS: Sir, you've got a couple of your papers up here.

MR. TIVIN: Okay. Thanks.

I'll come get them when everyone's...

THE COURT: Let me just speak with the lawyers up here real quick about the scheduling.

(WHEREUPON, a bench conference was held.)

THE COURT: All right. Ladies and gentlemen, we have about -- we've covered a lot of ground, obviously. And the estimate now is that we should have the case to you by next Thursday. The lawyers tell me that they're right on track to do that.

We can stay another 30 minutes today and finish up one of the deposition of the earlier witnesses. It's up to y'all. I'll let y'all make that call.

Do you want to stay for --

JUROR #11, ADAJHA BLACK: No.

THE COURT: -- 30 minutes and do it or --

JUROR #11, ADAJHA BLACK: No.

THE COURT: Okay. Well...

(Pause.)

(WHEREUPON, there was a short discussion amongst the jurors that was out of the hearing of the court reporter.)

UNIDENTIFIED JUROR: Yes.

JUROR #11, ADAJHA BLACK: I object. I have somewhere to be.

THE COURT: All right. Well, this is --

JUROR #130, MATTHEW MASON: Do you guys want to do it?

JUROR #11, ADAJHA BLACK: I don't want --

UNIDENTIFIED JUROR: We'll leave it up --

JUROR #11, ADAJHA BLACK: -- to stay.

UNIDENTIFIED JUROR: -- to him. We'll leave it up to him.

JUROR #130, MATTHEW MASON: Who wants to stay?

UNIDENTIFIED JUROR: Yes.

(Pause.)

(WHEREUPON, there was a short discussion amongst the jurors that was out of the hearing of the court reporter.)

JUROR #130, MATTHEW MASON: We're staying.

THE COURT: Okay. It's just 30 minutes. We'll finish that up.

MR. PANATIER: Can I approach, Your Honor?
THE COURT: Yes.
(WHEREUPON, a bench conference was held.)
THE COURT: We've got -- they tell me they're confident of the schedule. So we don't need to stick around. I don't want to belabor everything. Everybody is probably worn out by this point.
So we'll just come back tomorrow. Just be back at 9:15.
And, ma'am -- ma'am, why don't you let everybody else get out first.
Thank you.
UNIDENTIFIED JUROR: Me?
THE COURT: I'm talking to the lady in the red there -- or the orange.
UNIDENTIFIED JUROR: Her?
THE COURT: Yes.
(WHEREUPON, the jury was excused from open court at approximately 5:02 p.m.)
THE COURT: Jury charges. Y'all -- somebody has already submitted some, but --
MR. PANATIER: We have.
MR. TIVIN: We submitted ours.
MS. MCVEY: I think you've got everyone's.
MR. YOUNG: You should have ours, Judge.

THE COURT: Okay. I think we do.

I suspect everybody's got the one from the last -- I think Muldoon trial.

Does everybody have that?

So just to expedite things --

MR TIVIN: We don't have Muldoon. We have Garvin.

MS. MCVEY: Garvin may be more similar to the facts of this case than...

THE COURT: So Muldoon was the last one.

MR. PANATIER: Muldoon was a friction --

THE COURT: Y'all can look at both of them.

MR. TIVIN: Yeah.

MR. PANATIER: Muldoon was a friction case.

MR. YOUNG: That wasn't a premises case.

THE COURT: I understand that. But I'm talking about the general --

MR. ELLIOTT: Negligence and all.

THE COURT: So I'm just trying to make it easier on everybody.

MR. TIVIN: Sure.

THE COURT: So if y'all look at Garvin and Muldoon and see what you want in addition to that, that might be an easier way to do it.

MR. TIVIN: Okay.

THE COURT: That way, we don't have to totally

reinvent the wheel.

MR. YOUNG: Judge, I think our office was in all the cases, because we're a thorn in your side. But I think we tried to use as much of those as we could in ours, realizing that we have premises Defendants. So we can get all that to Mr. Tivin at the hotel, all the charges from those two cases.

THE COURT: Well, there's no rush. I just thought we could center it better.

MS. SHOFNER: And I think that in Muldoon, we took the Garvin charges, and then we sort of did a redline version for you --

THE COURT: Right.

MS. SHOFNER: -- to look at where we had identified what we thought was already covered from the general charges, and then what we wanted added with the cites.

THE COURT: Yes.

MS. SHOFNER: Is that how you'd like for us to see if we could present that --

MS. MCVEY: That's, actually, not what y'all did. Y'all took Garvin and you presented like 20 more -- I mean, papers, like we did this time. So we're happy to do it however you --

MS. SHOFNER: But I think in the end, we, actually, combined what we presented. And then all on a redline

version -- I didn't know how that would be easiest for everybody.

THE COURT: Well I know since y'all are such good lawyers -- and I'm not saying that anything but seriously. I just know that when we get down to the crunch time there at the end, everybody is going to be worn out, except me, of course. And -- because I haven't been doing the hard work like y'all have.

But, at any rate, I think it makes -- it's a lot more efficient if we have some kind of redline thing. And y'all -- maybe y'all can agree on the premises charge. I don't know. I haven't looked at them yet.

MR. YOUNG: I guess we'll get a directed verdict. Just kidding, Judge.

THE COURT: Well, this is all hypothetical.

MR. COLLIER: Your Honor, may I mark this offer of proof for Dr. Holstein as Court's Exhibit No. 3?

(WHEREUPON, Court's Exhibit No. 3 was marked for identification and admitted into evidence.)

(Pause.)

MR. YOUNG: Your Honor, let the record reflect that Court's Exhibit No. 3 is the testimony that we would have elicited from Dr. Holstein in our offer of proof on the mucociliary escalator issue. But the parties and the Court have agreed we could just tender the testimony from

his deposition, which would be the same that he would have given here as our offer of proof on that issue for Dr. Holstein.

Thank you, Your Honor.

THE COURT: Okay. So 9:15, 9:15 in the morning.

(WHEREUPON, the proceedings were concluded at approximately 5:07 p.m., to be reconvened on Friday, October 2, 2015.)

FRIDAY, OCTOBER 2, 2015

THE COURT: Yes, sir.

MR. YOUNG: Good morning, Judge.

THE COURT: He's pointing at you, Mr. Young.

MR. YOUNG: I'm sorry. I didn't hear what you said.

THE COURT: I said, he's pointing at you.

MR. YOUNG: Judge, I had told all the lawyers and your clerk that Celanese would like -- would move to excuse -- I think it's Juror #3, Ms. Black.

Your Honor, I think all the parties are entitled to have a jury that's paying attention and interested in the case. And she's been sleeping most of the time. And she was extremely antagonistic yesterday and didn't want to stay.

I know Your Honor doesn't want to award her behavior -- or reward her behavior by letting her go. But I just really don't think that she's an appropriate juror for any party in this case, which is complicated and has a ton of evidence. And we just feel like that we should have folks that are interested in paying attention.

I know Your Honor doesn't want to do this. But I just think it is fair to all the parties to excuse her. And I think I have the right number.

Is that right?

MR. TIVIN: I don't know what her number is. But

John Crane would join. I have a feeling that when she voted that the other people just voted because she voted one way, so everyone else just instantly did the opposite.

MR. PANATIER: Adajha Black. She's Juror #3, but she was Juror #11.

There's clearly some strife there. I don't know -- I don't know yet if it's disruptive, but I wouldn't oppose excusing her. I am not going to move for it, but I certainly do not oppose it.

THE COURT: Okay. Thank you.

I don't know about the sleeping. I mean, I've seen her with her eyes closed. But as the Gullah saying goes, not every shut eye is sleeping, not every goodbye is gone. So I don't know about that.

But I do believe that there was palpable tension when she volunteered her opinion yesterday about whether to stay. And she appears to be antagonistic towards not only her fellow jurors, but everybody else in the courtroom. And she doesn't seem to be concerned that other people have obligations as well.

So I would excuse her. I just think she's probably better off not serving on this particular jury.

Do we have everybody here?

THE BAILIFF: What number is that?

THE COURT: #11.

MR. PANATIER: Before they come in, I just wanted to speed things up. I've got the transcripts for the videos that are going to be played.

What court number are we up to?

THE COURT REPORTER: 4.

MR. PANATIER: So the next one is 4?

THE COURT REPORTER: Yes.

MR. PANATIER: So this one -- the video cuts for Charles Laubly will be 4. The video cuts for Dr. Kradin will be 5. And the video cuts for George McKillop will be 6.

And those are all just Court's Exhibits of the transcripts of the videos we're going to play this morning so the court reporters don't have to take it down.

(WHEREUPON, Court's Exhibit Nos. 4, 5, and 6 were marked for identification and admitted into evidence.)

MR. PANATIER: We'll finish with Ronnie Thompson from a few days ago. That's got about 46 minutes.

Then we have three more videos. Dr. Kradin is an hour and 40 minutes. Laubly is 17 minutes. And there's one more. McKillop is about an hour. I added it all together for all the video today. It's 3 hours and 45 minutes.

THE COURT: Did you use your calculator?

MR. PANATIER: Of course. 3 hours and 45 minutes.

And then we have two live witnesses. We have Linda Seay and Angie Keene. And those would each be fairly short.

So I was going to propose that we can -- we can go until lunch, you know, with all video, take a lunch. That would get us 45 minutes of video after lunch, and do the two live witnesses. Or if Your Honor wanted to, we could just go a few breaks, not do lunch, and just go straight through. But I don't have a preference. But that might be an option.

THE COURT: Well, let's just see how far we get.

MR. PANATIER: Okay.

THE COURT: I'd probably be leaning towards not doing a lunch.

MR. PANATIER: Well, we'll stop between each video. And you tell us when to stop for good, if you want to take a break.

MR. YOUNG: Right. Judge, I don't mean to be -- but would you be okay with us leaving, even if it's early, if we do that?

THE COURT: I'm not sure what you're asking me. Once you get through with all the --

MR. YOUNG: Yeah.

THE COURT: Yeah, I mean.

MR. YOUNG: Okay.

MR. PANATIER: We had planned to have an early day because that's it for our evidence, but for the corporate reps next week, so.

THE COURT: Okay. So --

MR. YOUNG: And, Judge, could we just go ahead and put on the record that, you know, we're holding the case open for our corporate rep. That we're not waiving the right to move for a directed verdict at the close of the Plaintiffs case until they, actually, rest --

THE COURT: Yeah.

MR. YOUNG: -- after our corporate reps.

MR. PANATIER: We agree to that. We stipulate to that.

THE COURT: Okay.

MR. YOUNG: Thank you, Your Honor.

THE COURT: Juror #11, can you tell her to bring all her stuff and come out here, please?

THE BAILIFF: Yes, sir.

(WHEREUPON, Juror #11, Adajha Black, entered the courtroom.)

THE COURT: All right, ma'am. You're excused. Thank you very much for your service.

Okay. You can bring the jury out.

(WHEREUPON, Juror #11, Adajha Black, exited the courtroom.)

THE COURT: Good morning, ladies and gentlemen.

We're going to get underway. I think the plan is -- from what I've been forecast by the attorneys is we have a number of witnesses today. Some of them will be appearing by video. But we're going to try to push through and take shorter breaks.

And, hopefully, we'll -- they're still ahead of schedule. So, hopefully, we can end early today. We probably won't take lunch in the hopes of getting through by the early afternoon and letting everybody go home.

Does that suit everybody?

(WHEREUPON, the jurors indicated in the affirmative.)

THE COURT: Yes, sir. Mr. Panatier.

MR. PANATIER: Thank you, Your Honor.

Good morning, everybody.

The first thing I'm going to do is just read in a stipulation on the reasonable and necessary costs of medical treatment for Mr. Seay. The parties have stipulated that Mr. Seay's medical bills, the reasonable and necessary medical bills, were $280,457.91. We'll put that up at the end so you don't have to memorize it.

Your Honor, we're going to now continue the deposition -- the video deposition of Ronnie Thompson.

And let us know if that's too loud.

Okay. Go ahead.

(WHEREUPON, Court's Exhibit No. 2 resumed being played in open court.)

MR. PANATIER: Your Honor, that's the conclusion of Ronnie Thompson's deposition. We can start the next deposition now, if you'd like.

THE COURT: It lasts how long, you said?

MR. PANATIER: This one is Dr. Kradin. He's a pathologist. So it's got our direct and the cross-examination. And it's about an hour and 42.

THE COURT: Is everybody okay? Do you want to take a little break?

JUROR #130, MATTHEW MASON: We're good.

THE COURT: I can't see over there. Do y'all want to take a short break? How about let's just take about a five-minute break, and then we'll resume.

(WHEREUPON, the jury was excused from open court at approximately 10:18 a.m.)

THE COURT: Let's take about five minutes.

(WHEREUPON, a break was taken.)

THE COURT: Okay. We're ready to go.

Are they ready?

THE BAILIFF: Yes.

THE COURT: Okay. Thank you.

(WHEREUPON, the jury came into open court at approximately 10:26 a.m.)

THE COURT: All right. Yes, sir.

MR. PANATIER: At this time, the Plaintiffs call Dr. Richard Kradin by video, a pathologist. And this is our direct examination and the Defendants cross-examination.

(WHEREUPON, Court's Exhibit No. 5 was played in open court.)

MR. PANATIER: Your Honor, at this time, we would offer Dr. Kradin as an expert in pathology and pulmonology.

MR. COLLIER: No objection.

MR. ELLIOTT: No objection.

THE COURT: Okay. He's qualified.

MR. PANATIER: Go ahead.

(WHEREUPON, Court's Exhibit No. 5 continued to be played in open court.)

MR. PANATIER: We're just going to skip to section. Our editing messed up a little bit. But we can skip it real fast. It will just take a minute.

(Pause.)

MR. PANATIER: Okay. We've got it.

(WHEREUPON, Court's Exhibit No. 5 continued to be played in open court.)

MR. PANATIER: That's the end of that video, Your Honor.

THE COURT: Okay. Ladies and gentlemen, we'll take

a -- about a 15- or 20-minute break. The -- what I decided to do was, with the Clerk's help, order y'all just some food back -- that you have back there, just in gratitude for your patience and cooperation.

And thank you for your service.

Now, before you think I'm really generous, remember that we paid for that with your tax money. So we have, in fact, accomplished the ultimate government act. We're bribing you with your own money.

We'll take about a 20-minute break.

Thank you.

(WHEREUPON, the jury was excused from open court at approximately 12:12 p.m.)

THE COURT: We'll go ahead and take about a 20-minute break.

(WHEREUPON, a break was taken.)

THE COURT: Mr. Panatier, you've got about 20 minutes -- I'm sorry. How much longer is the --

MR. PANATIER: Okay. So I'm going to do the corporate rep for John Crane next -- or, no, I'm sorry -- an older corporate rep for Celanese that's like 17 minutes. Then I'm going to put on Angie Keene for 15 minutes. Then I'm going to put on the video of George McKillop, the corporate rep for John Crane, and then Linda Seay. And then I'll be done today.

THE COURT: How much is that last video?

MR. PANATIER: The last video is one hour, McKillop.

THE COURT: Okay. So you can go ahead and bring the jury in.

MR. COLLIER: Your Honor, I need to -- can I do this offer of proof for Dr. Kradin real quick?

THE COURT: Yeah. Go ahead.

MR. PANATIER: Does it include my questions? You can do this anytime.

MR. COLLIER: Okay. I'll wait.

MR. PANATIER: Okay.

MR. COLLIER: I'm not sure what questions you have. Because I just pulled out the specific questions. But I can give you the deposition, if you want to look at it.

(WHEREUPON, the attorneys had an off-the-record discussion among themselves that was out of the hearing of the court reporter.)

(WHEREUPON, the jury came into open court at approximately 12:48 p.m.)

THE COURT: So it sounds like, from what I've been told, that we have about two more hours left today. So we'll try to push through that. It might be a little longer, but that's the good faith estimate.

So, yes, sir, Mr. Panatier.

MR. PANATIER: Thank you, Your Honor.