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IN THE CIRCUIT COURT OF COOK COUNTY, ILLINOIS
COUNTY DEPARTMENT - LAW DIVISION

EVA MULCAHY, Individually and)
as Special Administrator of the)
Estate of JOHN MULCAHY, Deceased,)
Plaintiff,)
vs.) No. 08 L 6223
3M COMPANY a/k/a MINNESOTA)
MINING & MANUFACTURING COMPANY,)
et al.,)
Defendants.)

August 26, 2009
10:12 a.m.

The Court met pursuant to recess.

BEFORE: HONORABLE CLARE E. McWILLIAMS.

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PRESENT (Continued):

GUNTY & MCCARTHY,

(150 South Wacker Drive, Suite 1025,

Chicago, Illinois 60606,

1-312-541-0022), by:

MS. SUSAN GUNTY, and

MR. JAMES P. KASPER,

-and-

K&L GATES LLP,

(Henry W. Oliver Building,

535 Smithfield Street,

Pittsburgh, Pennsylvania 15222-2312,

1-412-355-6493), by:

MR. JEFFREY S. KING, and

MR. MICHAEL J. R. SCHALK,

appeared on behalf of Defendant Crane

Company.

REPORTED BY: VICTORIA C. CHRISTIANSEN, No. 84-3192

KRISTIN C. BRAJKOVICH, No. 84-3810.

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APPEARANCES:

SIMON EDDINS & GREENSTONE,

(3232 McKinney Avenue, Suite 610,

Dallas, Texas 75204,

1-214-276-7680), by:

MS. JESSICA DEAN, and

MS. LAURA M. CABUTTO,

appeared on behalf of the Plaintiff;

WHEELER TRIGG O'DONNELL LLP,

(1801 California Street, Suite 3600,

Denver, Colorado 80202-2617,

1-303-244-1800), by:

MR. JOHN M. FITZPATRICK, and

MR. LaMAR F. JOST,

appeared on behalf of Defendant

General Electric;

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(WHEREUPON, the following

proceedings were had in chambers,

outside the presence and hearing of

the Jury, to wit:)

THE COURT: All right. Let's get started. I

have two of Crane Co.'s motions in limine that a

request was made that I hear before the

commencement of opening statements in this case.

Mr. Schalk, are you arguing these?

MR. SCHALK: Yes, your Honor.

THE COURT: All right. Let me hear --

Ms. Dean, are you arguing?

MS. DEAN: Yes, your Honor.

THE COURT: As far as the catalogs and other

products and entities not at issue in this case,

what is your intention as far as plaintiff's case

is concerned about using these documents?

MS. DEAN: Products that we believe are not at

issue, we do not intend to use. There are some

manuals that we have to redact out portions that

are not relevant. What I think is at the heart of

it is a dispute about what is at issue. We believe

that --

THE COURT: I don't want to argue what is at

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10:12:17 1 issue. I want to argue what you intend to use as
 10:12:17 2 documentation. If that's not a problem, you
 10:12:17 3 know -- I don't believe that anything in the
 10:12:17 4 catalogs pertaining to anything manufactured by
 10:12:17 5 Crane Co. that is not the subject matter of this
 10:12:17 6 matter should be used. So it sounds like we are on
 10:12:17 7 the same page.
 10:12:17 8 MS. DEAN: Agreed.
 10:12:17 9 THE COURT: Is that what you are looking for
 10:12:17 10 in this motion?
 10:12:17 11 MR. SCHALK: Yes. Our only concern is, is
 10:12:17 12 they are going to try to put in catalogs for other
 10:12:17 13 products, which Ms. Dean said she's not going to
 10:12:17 14 do.
 10:12:17 15 But we also don't want documents
 10:12:18 16 referencing other products that she believes could
 10:12:18 17 be at the facility that simply three coworkers have
 10:12:18 18 been deposed and there is no mention of anything
 10:12:18 19 other than the Crane Co. valve at the ComEd
 10:12:18 20 facility.
 10:12:18 21 THE COURT: All right. I'm going to grant
 10:12:18 22 this motion, and I'm asking everybody, if you are
 10:12:19 23 going to use documents or you have not exchanged
 10:12:19 24 exhibits, why don't you show them to each other

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10:12:19 1 ahead of time. And knowing that this is part of my
 10:12:19 2 ruling on the motion in limine, that you are going
 10:12:19 3 to show opposing counsel whatever it is that you
 10:12:19 4 are intending on using before trial.
 10:12:19 5 MS. DEAN: I very much anticipate -- the
 10:12:20 6 documents, I understand that, and that is easy to
 10:12:20 7 do. In terms of opening statements, we believe
 10:12:20 8 that there is evidence that the gaskets in the
 10:12:20 9 crane valve, what are called crane gaskets, were
 10:12:20 10 supplied to them, and, in addition, they had
 10:12:20 11 knowledge that they would be insulated by virtue of
 10:12:20 12 the fact that they showed and advertised that they
 10:12:20 13 designed their valves for insulation.
 10:12:20 14 So I absolutely don't plan on talking
 10:12:20 15 about a type of equipment that is not in this case,
 10:12:20 16 but I am going to, in opening statement, mention
 10:12:20 17 that they sold the gaskets and that they knew the
 10:12:20 18 insulation would be there. If they want that to be
 10:12:21 19 heard before I do it in opening, I want to make
 10:12:21 20 sure they have their chance to do that.
 10:12:21 21 THE COURT: Now, that is an argument that is
 10:12:21 22 going to be made, and that is part of their case.
 10:12:21 23 MR. SCHALK: Your Honor, but as far as the
 10:12:21 24 crane goes, this is going to be unduly

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10:12:21 1 prejudicial to my client to without evidence to
 10:12:22 2 suggest that craneite was used at that facility.
 10:12:22 3 Three coworkers were deposed at length.
 10:12:22 4 They were asked what gaskets, what packing, what
 10:12:22 5 were the names that you recall seeing Mr. Mulcahy
 10:12:22 6 work with, what do you recall working with at that
 10:12:22 7 facility.
 10:12:22 8 THE COURT: That is an issue that goes to
 10:12:22 9 weight, not admissibility. You are, in fact, going
 10:12:22 10 to be able to argue that, if none of it was used.
 10:12:22 11 Their position is that it was used. Is that right?
 10:12:22 12 MS. DEAN: Yes.
 10:12:22 13 THE COURT: Okay. So it comes in, and it's
 10:12:22 14 just going to be a matter of how the jury
 10:12:22 15 interprets it when they are trying the facts in
 10:12:23 16 this case.
 10:12:23 17 The next motion I have is Crane's motion
 10:12:23 18 to preclude the actions or knowledge of trade
 10:12:23 19 associations. Any objection to this?
 10:12:23 20 MS. DEAN: Yes, your Honor.
 10:12:23 21 THE COURT: What is your objection?
 10:12:23 22 MS. DEAN: They cite to a bunch of civil
 10:12:23 23 conspiracy cases, and to affirm their position, I
 10:12:23 24 think maybe they misunderstand why we are trying to

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10:12:24 1 use this evidence.
 10:12:24 2 What we have to prove is what this
 10:12:24 3 company knew or should have known about the dangers
 10:12:24 4 of asbestos. What we do all over is figure out
 10:12:24 5 what organizations they were in, to show that that
 10:12:24 6 was information they either knew or had available
 10:12:24 7 to them, and, therefore, should have known.
 10:12:24 8 We have talked to General Electric.
 10:12:24 9 They agree that this is relevant evidence, but
 10:12:24 10 Crane has cited civil conspiracy cases that say
 10:12:24 11 this, The crime is committed and you are there.
 10:12:24 12 It's not enough to say that you are responsible for
 10:12:24 13 that crime unless you somehow affirmatively adopted
 10:12:24 14 the behavior of the organization that did the bad
 10:12:25 15 behavior.
 10:12:25 16 I'm not doing this to say that the
 10:12:25 17 National Safety Council did something bad and Crane
 10:12:25 18 is on the line for it because they adopted it.
 10:12:25 19 Rather, what I am saying is, the National Safety --
 10:12:25 20 Crane was a member of the National Safety Council
 10:12:25 21 and provided their membership articles about the
 10:12:25 22 dangers of asbestos and that that is probative
 10:12:26 23 evidence of what they knew or should have known
 10:12:26 24 about those dangers.

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10:12:26 1 THE COURT: Okay. Thank you. I'm not cutting
 10:12:26 2 you off. I'm reserving this issue.
 10:12:26 3 In your opening statements, if you are
 10:12:26 4 intending on discussing this, I don't want you to
 10:12:26 5 go into associations. You can use a global comment
 10:12:26 6 that they knew or should have known based on X, Y,
 10:12:26 7 and Z using the word "associations." I'm going to
 10:12:26 8 prohibit you from going into all of the
 10:12:26 9 associations, what they did. I don't know if you
 10:12:26 10 are ever intending on using the word "conspiracy."
 10:12:26 11 It doesn't sound like you are going to.
 10:12:26 12 MS. DEAN: No, your Honor.
 10:12:26 13 THE COURT: I think that was the subject
 10:12:26 14 matter of a motion in limine, but I want you to
 10:12:27 15 avoid all of that, and as it comes up, we are going
 10:12:27 16 to deal with it then.
 10:12:27 17 MS. DEAN: So there are members of
 10:12:27 18 associations but don't get into what the
 10:12:27 19 associations said?
 10:12:27 20 THE COURT: Or did. Just the members.
 10:12:27 21 MR. FITZPATRICK: Judge, I was going to say, I
 10:12:27 22 think for one association that I know they used,
 10:12:27 23 the National Safety Council, I have never objected
 10:12:27 24 to it. We were members. We were actually founding

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10:12:27 1 members. They use that. I have no objection, and
 10:12:27 2 I told her for her opening. So if she wanted to
 10:12:27 3 use that on GE, I have no objection.
 10:12:27 4 THE COURT: Do you have an objection to that
 10:12:27 5 particular association?
 10:12:27 6 MR. SCHALK: Yes. We are not founding
 10:12:27 7 members, and in the past there have been documents
 10:12:28 8 from the NSC that have been published to try to
 10:12:28 9 impute that knowledge on Crane Co. before Crane Co.
 10:12:28 10 was even a member.
 10:12:28 11 THE COURT: Okay. Well, don't do it against
 10:12:28 12 Crane Co., and if you want to use it against GE.
 10:12:28 13 MR. FITZPATRICK: You can do it against me.
 10:12:28 14 It is notice.
 10:12:28 15 THE COURT: Let's get to opening statements.
 10:12:28 16 I'll see you across the hall.
 10:12:29 17 MR. KING: Thank you, your Honor.
 10:11:14 18 THE COURT: All right. Do we have Ms. Gurny?
 10:11:35 19 MR. KING: She'll be here.
 10:11:37 20 MR. FITZPATRICK: I have no objection to any
 10:11:40 21 exhibits that she shows. We gave her notice, we've
 10:11:42 22 already talked, it's been agreed to.
 10:11:45 23 THE COURT: All right. Thank you.
 10:11:47 24 MS. DEAN: On a similar note, we also reached

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10:11:55 1 an agreement with Crane not to exchange PowerPoints
 10:11:56 2 and exhibits in advance, instead just
 10:11:59 3 contemporaneously during the openings, and also
 10:12:03 4 would like to seek a ruling -- a standing
 10:12:05 5 objection in opening statements not to object to
 10:12:09 6 counsel's reference to other exposures. We believe
 10:12:15 7 that's a violation, but don't want to have to jump
 10:12:19 8 up every time they say something.
 10:12:22 9 Is that agreeable to all parties?
 10:12:24 10 THE COURT: I'll allow that to serve as a
 10:12:26 11 standing objection -- and continuing objection to
 10:12:29 12 my ruling in the motion in limine.
 10:12:35 13 All right. Everyone's here. Let's
 10:12:36 14 bring them out.
 10:12:38 15 THE DEPUTY: All rise for the jury, please.
 10:12:38 16 (WHEREUPON, the following further
 10:12:38 17 proceedings were had in open court,
 10:12:38 18 in the presence and hearing of the
 10:13:24 19 Jury, to-wit:)
 10:13:24 20 THE COURT: Thank you, Deputy.
 10:13:26 21 Good morning, ladies and gentlemen.
 10:13:27 22 Nice to see you all today. Welcome back.
 10:13:30 23 I apologize, first of all, for the
 10:13:33 24 delay. We have a saying here, and that is for

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10:13:35 1 every hour of jury time, there's about two, two and
 10:13:38 2 a half hours of lawyer time, and that's what you're
 10:13:41 3 experiencing. I can assure you we're going to
 10:13:44 4 attempt to be on schedule and do our best to commit
 10:13:49 5 that to you.
 10:13:50 6 I have some remarks to make to you
 10:13:52 7 before the lawyers start with opening statements
 10:13:54 8 today. Much of this you heard yesterday, so please
 10:13:56 9 bear with me.
 10:13:58 10 A plaintiff, as you already know, has a
 10:14:00 11 right to file a lawsuit. A defendant has a right
 10:14:03 12 to defend it. The parties have a right to have a
 10:14:05 13 jury decide the issues in this case.
 10:14:07 14 The fact that a lawsuit has been filed
 10:14:09 15 does not automatically mean that a plaintiff is
 10:14:12 16 entitled to recover money damages; likewise, the
 10:14:14 17 fact that a defendant denies liability does not
 10:14:17 18 automatically mean that the plaintiff is not
 10:14:19 19 entitled to recover damages.
 10:14:21 20 The trial will begin with opening
 10:14:24 21 statements. This is an opportunity for the
 10:14:25 22 attorneys to tell you what they believe the
 10:14:27 23 evidence is going to show as the trial proceeds.
 10:14:30 24 It's not a time for them to make

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10:14:32 1 arguments to you. It's a chance for the attorneys
 10:14:34 2 to familiarize you with what they believe the facts
 10:14:37 3 are going to be.
 10:14:38 4 The evidence at trial consists primarily
 10:14:41 5 of the witnesses' testimony from the witness stand
 10:14:45 6 and physical objects or items that we call
 10:14:48 7 exhibits. It is from the witnesses' testimony and
 10:14:51 8 the exhibits that you are going to determine what
 10:14:54 9 the facts in this case are.
 10:14:56 10 It has been said that in a jury trial,
 10:14:58 11 the judge is the judge of the law and the jury is
 10:15:01 12 the judge of the facts. It is your job as jurors
 10:15:04 13 to decide the facts in this case.
 10:15:07 14 In that connection, you're to judge the
 10:15:09 15 credibility of the witnesses. That means you are
 10:15:11 16 to judge the witnesses' believability and also
 10:15:15 17 decide the weight to be given to each of the
 10:15:17 18 witness's testimony.
 10:15:19 19 It's absolutely crucial that you hear
 10:15:21 20 everything the witnesses have to say. As I
 10:15:24 21 indicated to you yesterday, I have probably three
 10:15:27 22 banks of elevators on this side of the wall and
 10:15:30 23 oftentimes the acoustics are very difficult here.
 10:15:33 24 If someone is on this witness stand and you cannot

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10:15:35 1 hear a witness, you either have to get my
 10:15:38 2 attention, the deputy's attention, raise your hand
 10:15:41 3 or give me a shout-out because what they're saying
 10:15:45 4 is worthless if you can't hear.
 10:15:46 5 The plaintiffs will present evidence
 10:15:49 6 first and then the defendants will present
 10:15:50 7 evidence. After either side has rested and their
 10:15:55 8 presentation of evidence is complete, you may hear
 10:15:57 9 rebuttal evidence from the plaintiff's side. That
 10:15:58 10 usually takes a much shorter period of time.
 10:16:01 11 During the presentation of evidence and
 10:16:03 12 any other times during the trial, you may hear the
 10:16:06 13 attorneys make objections. Please don't hold this
 10:16:08 14 against the attorneys. It's their duty to make
 10:16:10 15 objections and make sure that only relevant and
 10:16:13 16 material evidence is heard by you and immaterial
 10:16:16 17 and irrelevant evidence is kept out of this trial.
 10:16:20 18 You will hear an attorney say,
 10:16:21 19 "Objection." When I sustain an objection, you will
 10:16:24 20 hear me say, "Objection sustained." That means I
 10:16:28 21 agree with the lawyer making the objection. You're
 10:16:30 22 to disregard an answer if it was given and
 10:16:32 23 disregard the question.
 10:16:34 24 When I overrule an objection, you will

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10:16:36 1 hear me say, "Objection overruled." That means I
 10:16:39 2 disagree with the attorney making the objection and
 10:16:41 3 you can go ahead and listen to the question and
 10:16:43 4 listen to the answer, but don't give it any more
 10:16:46 5 weight you would ordinarily give it had the
 10:16:48 6 objection not been made at all.
 10:16:50 7 From time to time, as you already know,
 10:16:52 8 there are going to be conferences between me and
 10:16:54 9 the lawyers which are absolutely necessary. These
 10:16:58 10 are called sidebars. We know and respect your time
 10:17:01 11 and we also recognize that you're sitting waiting
 10:17:04 12 for us. Please forgive us and don't hold it
 10:17:07 13 against the attorneys, either.
 10:17:08 14 I ask that you keep an open mind and not
 10:17:10 15 make any decisions or draw any conclusions until
 10:17:13 16 all of the evidence has been presented to you in
 10:17:14 17 this case and you have had the benefit of all the
 10:17:17 18 attorneys' closing arguments to you.
 10:17:21 19 When you return to the courthouse either
 10:17:22 20 at the beginning of the day or after your lunch
 10:17:24 21 hour, please proceed to the jury room directly, as
 10:17:27 22 I advised you yesterday. There may be lawyers and
 10:17:29 23 witnesses in the hallway that don't recognize you
 10:17:32 24 as jurors and they may be talking about the case.

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10:17:35 1 Lastly, you're instructed that every
 10:17:37 2 juror has a right to take and use written notes.
 10:17:41 3 Notepads and pens have been provided for your
 10:17:43 4 convenience. Please place your name on the front
 10:17:45 5 of your notepad, and no one will be allowed to look
 10:17:48 6 at your notes at any time.
 10:17:51 7 Those of you who take notes during trial
 10:17:53 8 may use your notes to refresh your recollection
 10:17:56 9 during jury deliberations. Each juror should rely
 10:17:59 10 on his or her recollection of the evidence in this
 10:18:02 11 case. Just because a juror has taken notes does
 10:18:05 12 not automatically mean that that juror's
 10:18:07 13 recollection of the evidence is any better than
 10:18:09 14 someone that has not taken notes.
 10:18:12 15 When you are discharged from service in
 10:18:14 16 this case, your notes will be collected by my
 10:18:16 17 deputy and destroyed. Throughout that process, no
 10:18:19 18 one will be allowed to look at your notes at any
 10:18:23 19 time and they will remain confidential.
 10:18:25 20 And that concludes my opening remarks to
 10:18:28 21 you, ladies and gentlemen. At this time you're
 10:18:29 22 going to hear opening statements by the attorneys.
 10:18:32 23 Ms. Dean.
 10:18:32 24

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10:18:33 1 OPENING STATEMENT ON BEHALF OF THE PLAINTIFF
 10:18:33 2 MS. DEAN: Good morning, everybody.
 10:18:41 3 Asbestos. When it's in the air, a
 10:18:46 4 person gets sick just from breathing it.
 10:18:50 5 General Electric and Crane Company sold
 10:18:54 6 asbestos products. We use these products every
 10:18:57 7 day. Hundreds if not thousands of them are in our
 10:18:59 8 homes and environment, and you will hear it's
 10:19:03 9 impossible for any person, regardless of how safety
 10:19:05 10 conscious they are, to test everything, instead, we
 10:19:09 11 expect that the people that sell us the product
 10:19:13 12 will let us know if it's dangerous.
 10:19:18 13 You see, this is a case about companies,
 10:19:22 14 businesses that had every reason to know that their
 10:19:25 15 product could harm people, people like John
 10:19:29 16 Mulcahy, but who made the decision to do nothing
 10:19:32 17 about it.
 10:19:34 18 The first thing I'd like to do is
 10:19:38 19 introduce you to Eva Mulcahy. You don't have to
 10:19:40 20 stand. She's here with her daughters. This is
 10:19:44 21 Sandra and Barbara. They're here for everything
 10:19:45 22 that happened to John before he died and they're
 10:19:49 23 here for the loss of a husband and father.
 10:19:52 24 And you're here because we asked you to

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10:19:54 1 be here, because we want an opportunity to prove
 10:19:58 2 our case and have you hear about what happened to
 10:20:01 3 this family.
 10:20:06 4 No one disputes he died of mesothelioma,
 10:20:06 5 an asbestos cancer that was caused from his
 10:20:09 6 exposure to asbestos. In proving that, there are
 10:20:14 7 three things that I'd like to focus on.
 10:20:16 8 First, what these companies knew about
 10:20:20 9 the dangers of asbestos, and again, I agree, not
 10:20:22 10 today, back when they sold these products; second,
 10:20:29 11 what did they do with that information; and
 10:20:33 12 finally, who got hurt? That's a picture of John
 10:20:38 13 shortly after he found out he was diagnosed with
 10:20:40 14 mesothelioma.
 10:20:42 15 So the first thing I want to talk to you
 10:20:45 16 about is the fact that they had every reason to
 10:20:47 17 know that asbestos was deadly in their asbestos
 10:20:50 18 products, and the first reason you're going to hear
 10:20:52 19 that is because they made and sold dangerous
 10:20:54 20 products.
 10:20:56 21 Crane Company sold valves, and you're
 10:20:59 22 going to hear that a valve couldn't be maintained
 10:21:03 23 and repaired without having exposure to asbestos
 10:21:07 24 because there was asbestos on the valves and

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10:21:10 1 asbestos in the valves. You had asbestos gaskets,
 10:21:14 2 asbestos packaging and various forms of asbestos
 10:21:17 3 insulation.
 10:21:18 4 This is an example of an insulated
 10:21:21 5 valve. Now, there are different types of valves,
 10:21:23 6 and we'll get into the minutia during the trial,
 10:21:26 7 but on a most basic level, this is a globe valve.
 10:21:28 8 It has a metal box, and what a valve is used for is
 10:21:30 9 to control the flow of steam or water or some kind
 10:21:33 10 of fluid, the type of valve everybody knows is in
 10:21:36 11 your kitchen.
 10:21:38 12 This is similar and much bigger, and
 10:21:40 13 Crane sold valves that were hundreds of pounds.
 10:21:43 14 You could turn that handle, and that controls the
 10:21:45 15 water going on or off.
 10:21:47 16 And you're going to hear they knew the
 10:21:49 17 temperature and pressure that these different
 10:21:52 18 valves were going to be used and that the steam
 10:21:54 19 valves, because they were so hot -- 700, 800, 900
 10:21:58 20 degrees Fahrenheit -- were massive, and asbestos
 10:22:00 21 insulation was used because it could protect the
 10:22:03 22 worker from being burnt by the hot valve and it
 10:22:06 23 also kept the heat into the system, which was
 10:22:09 24 important for the system to be operating.

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10:22:12 1 The evidence is going to be that Crane
 10:22:14 2 did not make that asbestos insulation, but you will
 10:22:18 3 hear that they absolutely knew and understood that
 10:22:21 4 to work on their product, that asbestos insulation
 10:22:23 5 would have to be disturbed, and there's four ways
 10:22:26 6 that you're going to hear that.
 10:22:28 7 First, you're going to see manuals from
 10:22:32 8 Crane Company back from the 1920s, '30s, '40s, '50s
 10:22:39 9 and advertisements from Crane Company that show
 10:22:42 10 that they absolutely understood insulation was
 10:22:45 11 being used because they were showing pictures in
 10:22:46 12 their catalogs of insulated valves insulated with
 10:22:49 13 asbestos.
 10:22:50 14 But the second reason is because they
 10:22:52 15 actually sold the insulation. They sold asbestos
 10:22:55 16 insulation to users advertising themselves as a
 10:22:59 17 one-stop shop. That's their logo. You could get
 10:23:01 18 the valve, the gasket, the packing, the pipe, the
 10:23:04 19 flange, the insulation all from Crane Company.
 10:23:08 20 But a third reason is because they
 10:23:12 21 recommended the type of insulation. They would
 10:23:15 22 say, "Use this type of asbestos insulation versus
 10:23:18 23 this type because it's cheaper or it's thicker or
 10:23:21 24 it's more durable."

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10:23:22 1 And then finally you're going to hear
 10:23:24 2 that the actual design of the valve was made
 10:23:27 3 specifically to be insulated, and they advertised
 10:23:31 4 that. "We have a sleeker body, easier to
 10:23:33 5 insulation," things of that nature.
 10:23:37 6 The reason this is so important is
 10:23:38 7 you're going to hear that in order to do any kind
 10:23:40 8 of work on this, to get to the body of the valve,
 10:23:44 9 you have to remove this insulation.
 10:23:46 10 Now, insulation untouched, just like any
 10:23:50 11 asbestos product like a floor tile, doesn't present
 10:23:53 12 danger. It's when you remove it or work on it
 10:23:55 13 releasing asbestos into the air, and what workers
 10:23:59 14 would have to do on Crane valves is remove that
 10:24:02 15 insulation, putting tons of asbestos into the air,
 10:24:05 16 and you're going to hear that was dangerous.
 10:24:08 17 But it wasn't just the insulation.
 10:24:10 18 There was also asbestos in the valves, there was
 10:24:12 19 asbestos gaskets and asbestos packing.
 10:24:17 20 Crane not only sold asbestos gaskets and
 10:24:20 21 packing in the valves but later when those things
 10:24:22 22 were removed and changed and taken out, they sold
 10:24:26 23 replacement parts.
 10:24:27 24 Now, asbestos packing is used where

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10:24:30 1 there's moving parts. In the gland of a valve --
 10:24:34 2 you have where the wheel is going to be turned two
 10:24:38 3 metal moving parts, and packing was put in there
 10:24:40 4 because, first, asbestos packing was needed when
 10:24:43 5 you're working with metal and, second, it kept
 10:24:46 6 leaks from happening. You don't want especially
 10:24:48 7 steam to be coming out.
 10:24:50 8 But that packing, just from being used,
 10:24:52 9 would get worn down and have to be replaced. You
 10:24:55 10 would literally have to replace it or -- replace it
 10:24:57 11 to remain.
 10:24:58 12 You're going to hear about how that was
 10:24:59 13 done by John Mulcahy. What they would do is first
 10:25:03 14 let that valve cool off, all right? It's 700, 800
 10:25:08 15 degrees. You can't get in to do your work.
 10:25:10 16 In the meantime, that packing would get
 10:25:12 17 dry and brittle, and they would take a metal hook
 10:25:14 18 and literally pick it out, and it was critical to
 10:25:17 19 get all the asbestos packing out, so they would
 10:25:20 20 next take compressed air and blow air into the
 10:25:22 21 valve putting the asbestos into their face.
 10:25:23 22 And you are going to hear that is
 10:25:25 23 incredibly dangerous. But there are also asbestos
 10:25:29 24 gaskets, and there were different types of asbestos

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10:25:31 1 gaskets. There were flexitallic or spiral wound
 10:25:34 2 gaskets, which were metal with asbestos in the
 10:25:36 3 middle of them. And you are going to hear when
 10:25:38 4 those were new, they created no problem. But after
 10:25:41 5 they were put into a Crane valve and crushed
 10:25:44 6 together and you had to replace them, that would
 10:25:47 7 cause asbestos to be put into the air.
 10:25:49 8 Same thing with something called a sheet
 10:25:52 9 gasket. Here you are seeing a U sheet gasket on
 10:25:55 10 the end of a flange. If you have two pieces of
 10:25:57 11 equipment or pipes that need to be a put together
 10:25:58 12 with a valve, you will have two flange units with
 10:26:02 13 bolts so that you can bolt the two pieces together.
 10:26:05 14 A gasket is put in between those two pieces so you
 10:26:08 15 don't have leaking.
 10:26:08 16 The gaskets that Crane used and made
 10:26:12 17 were with 80 to 90 percent asbestos. More asbestos
 10:26:16 18 than anyone else, but they used a rubber binding to
 10:26:20 19 keep it together. And you are going to hear,
 10:26:22 20 again, that a gasket when it's new is no problem,
 10:26:25 21 just like insulation that is painted is no problem.
 10:26:28 22 But once it's put into a Crane valve and
 10:26:31 23 it bakes and cakes onto the side and you have to do
 10:26:34 24 repair and maintenance, and you pull the pipe and

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10:26:37 1 valve away from each other and you have gasket
 10:26:41 2 stuck all over. And what the workers had to do was
 10:26:41 3 scrape that off, 90 percent asbestos, putting it
 10:26:44 4 into the air, which is extraordinarily dangerous.
 10:26:49 5 But Crane was not the only one that made
 10:26:52 6 and sold dangerous products. You are also go to
 10:26:57 7 hear about General Electric. They sold turbines.
 10:27:00 8 That is what they did. Now, the first type of
 10:27:01 9 turbine I am going to talk about was used with
 10:27:02 10 pumps. Pumps were used in systems in order to
 10:27:06 11 propel and push forward steam or fluid, and in
 10:27:10 12 order to have power you had to use a motor or a
 10:27:12 13 turbine. GE sold those turbines.
 10:27:16 14 And at the plants that we are talking
 10:27:17 15 about, you are going to hear that there were main
 10:27:20 16 feed pumps that were powered by General Electric
 10:27:22 17 turbines, that had asbestos insulation, and that in
 10:27:25 18 order to work on that, you had to remove that
 10:27:27 19 insulation, which was extraordinarily dangerous.
 10:27:31 20 But probably the most dangerous product
 10:27:33 21 that you are going to hear about is this. This is
 10:27:36 22 not just a turbine. It's called a turbo generator.
 10:27:38 23 It's a cross-compound turbine generator, and it is
 10:27:42 24 called cross-compound because you have a

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10:27:43 1 high-pressure turbine and you have a low-pressure
10:27:46 2 turbine, and here are the generators.

10:27:50 3 There were over half a dozen of these
10:27:53 4 huge products that were at the different sites that
10:27:56 5 John Mulcahy worked at. I don't know if you can
10:27:59 6 see these on the other side, but it gives you a
10:28:01 7 little bit of the idea of how massive, absolutely
10:28:04 8 huge these things are. Underneath this here, this
10:28:09 9 is called a metal lagging. There was all sorts of
10:28:14 10 asbestos insulation. You will hear there is
10:28:15 11 different types of insulation, mud and insulation
10:28:18 12 and blankets, and GE used it all.

10:28:21 13 But here you are only getting part of
10:28:22 14 the picture. This is the same cross-compound
10:28:27 15 General Electric turbine generator, but we have
10:28:30 16 moved back a little bit. What you can see now is
10:28:33 17 that this top part was only a very small part of
10:28:36 18 the picture, because all underneath here where the
10:28:40 19 maintenance guys were working is everything else.
10:28:43 20 You have pipes with asbestos insulation, miles of
10:28:46 21 pipes.

10:28:47 22 General Electric sold hundreds of valves
10:28:49 23 with gaskets and packing that were asbestos
10:28:52 24 containing. They sold half a dozen pumps. They

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10:28:56 1 sold strainers. They sold the actual insulation,
10:29:00 2 hundreds of pounds of insulation all as part of
10:29:03 3 this system. And overhauls and work had to be done
10:29:10 4 on this on a consistent basis, and you are going to
10:29:13 5 hear that work was extraordinarily dangerous.

10:29:16 6 Now, the same with Crane. General
10:29:17 7 Electric did not make the insulation. They went to
10:29:20 8 someone else and got it, but we have the contract
10:29:22 9 at the work sites that John Mulcahy worked at and
10:29:25 10 know that General Electric was the one that sold
10:29:27 11 the insulation that was used there on this product.
10:29:31 12 Same with the gaskets. They did not make them.
10:29:33 13 They may have gone to Crane to get the gaskets or
10:29:37 14 someone else, but they sold thousands of them and
10:29:39 15 it was extraordinarily dangerous.

10:29:41 16 But it was not just that they made and
10:29:43 17 sold dangerous products. You are going to hear
10:29:45 18 there was widespread public information that showed
10:29:48 19 asbestos could kill people. Over 100 years ago
10:29:51 20 there was information that even small amounts of
10:29:54 21 asbestos could kill you.

10:29:56 22 By the 1930s there was studies that
10:29:59 23 showed asbestos products as opposed to raw asbestos
10:30:02 24 could kill people, and these were in published

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10:30:05 1 literature that said the very products that we are
10:30:07 2 talking about today in 2009, gaskets, packing,
10:30:12 3 insulation, could cause disease.

10:30:16 4 By the 1940s, studies confirmed that it
10:30:18 5 could not just cause disease but it could cause
10:30:21 6 cancer. And you are going to hear a lot about why
10:30:22 7 cancer is much more scary and much more dangerous
10:30:26 8 than other diseases.

10:30:27 9 And by the 1960s, there were literally
10:30:31 10 thousands of articles in the published literature
10:30:32 11 about the dangers of asbestos. And you are going
10:30:35 12 to hear that's important because in the State of
10:30:37 13 Illinois when you manufacture a product, you have a
10:30:39 14 duty to know about these dangers, to look at this
10:30:43 15 literature.

10:30:44 16 But it was not just on literature.
10:30:46 17 Starting in the '70s it became government
10:30:49 18 regulation. See, OSHA had an emergency standard in
10:30:51 19 1971 to regulate asbestos and to put a limit on the
10:30:54 20 amount of asbestos that could be released into the
10:30:57 21 air when you worked with the product. The reason
10:30:59 22 they had it, it's actually in the regulations, you
10:31:02 23 had to have this emergency standard because people
10:31:04 24 were dying and that this limitation was only

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10:31:07 1 temporary. We are going to have to get it lowered
10:31:09 2 because people are dying.

10:31:11 3 What that limitation is called is a
10:31:14 4 threshold limit value. And you will hear that
10:31:16 5 while OSHA was the first to regulate it larger like
10:31:19 6 this, scientists since the 1940s had had different
10:31:23 7 threshold limit values, saying you cannot exceed
10:31:27 8 this amount or people will get hurt.

10:31:30 9 So this is important. Both the
10:31:31 10 scientists and OSHA also said, even if you are
10:31:35 11 below this amount, people can still get hurt. You
10:31:38 12 still have to do testing. You still have to let
10:31:41 13 people know and warn them that they could get hurt
10:31:43 14 by this product even below the amount that we are
10:31:46 15 setting on this emergency standard.

10:31:48 16 So the evidence is going to show that
10:31:49 17 when he worked there in the 1980s and by the time
10:31:52 18 that he left working around these companies'
10:31:56 19 equipment, not only through regulations but
10:31:58 20 literature, it was well understood what they sold
10:32:01 21 and made was extraordinarily dangerous.

10:32:04 22 But you are finally going to hear that
10:32:06 23 other than the general information from the public,
10:32:08 24 in the literature and by the government, they were

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10:32:11 1 told because of organizations that they were in
 10:32:14 2 that asbestos was dangerous over and over again.
 10:32:17 3 General Electric was told by the
 10:32:19 4 National Safety Council, which they were a founding
 10:32:22 5 member of, that not only that asbestos was
 10:32:26 6 dangerous in the 1930s, but the threshold limit
 10:32:30 7 value of the day did not mean that people were
 10:32:32 8 going to be safe. You have got to protect people.
 10:32:34 9 The American Society of Mechanical Engineers, they
 10:32:38 10 were also a member of that in the 1930s that said,
 10:32:39 11 you have to test this stuff. You have to protect
 10:32:42 12 people.
 10:32:42 13 You are going to hear through all of
 10:32:43 14 these different organizations, that both Crane and
 10:32:46 15 General Electric were a member of, other than the
 10:32:49 16 top one -- Illinois Manufacturing Association,
 10:32:51 17 Crane was only a member of -- were providing
 10:32:53 18 information to those members.
 10:32:55 19 So the next question is, what did they
 10:32:57 20 do with that information? You are going to hear
 10:33:02 21 that they chose not to warn a soul. When General
 10:33:08 22 Electric got the contract to build these massive
 10:33:12 23 turbo generators and bring the turbines, for making
 10:33:18 24 parts, it was part of the contract that they had to

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10:33:19 1 give a dozen manuals to make sure that the people
 10:33:22 2 working on the equipment could review it and how to
 10:33:23 3 do it safely.
 10:33:24 4 There is not a single one. There are
 10:33:29 5 placards that were put on the equipment of Crane
 10:33:33 6 valves and General Electric turbines, and not one
 10:33:35 7 of the placards indicates there was a danger of
 10:33:36 8 working with this product.
 10:33:39 9 But you are also going to hear that
 10:33:42 10 these companies were at the work site. Crane
 10:33:45 11 Company was the piping contractor. They were
 10:33:49 12 there. General Electric put all of this together
 10:33:51 13 on-site, and there are records. We have 13 boxes
 10:33:55 14 of documents from their involvement with just one
 10:33:58 15 of the sites that he was at.
 10:34:01 16 And they are there dozens of times, and
 10:34:04 17 they never say to the workers they are supervising,
 10:34:08 18 including John Mulcahy, the stuff that you are
 10:34:09 19 working with is dangerous, so that they can make
 10:34:11 20 their own choice about what to do.
 10:34:13 21 In fact, you are going to hear about
 10:34:16 22 General Electric in the 1970s, while John Mulcahy
 10:34:18 23 is still working with their product, they made a
 10:34:21 24 determination that asbestos is too dangerous and

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10:34:23 1 too much of a liability to sell. No one disputes
 10:34:27 2 that.
 10:34:27 3 Now, did they go back to the people they
 10:34:30 4 already sold it to to tell them that? When they
 10:34:34 5 kept going back to Will County, where Mr. Mulcahy
 10:34:38 6 worked, and worked side by side with him for the
 10:34:40 7 next ten years, did they let him know that we are
 10:34:43 8 not selling it anymore because it's so dangerous
 10:34:46 9 and, by the way, you are working on the same thing
 10:34:48 10 right now? That never happened. But this case is
 10:34:51 11 more about the failure to warn. That is one thing
 10:34:54 12 that we are here about.
 10:34:56 13 But the second thing we you will hear is
 10:35:00 14 that we believe that both Crane and General
 10:35:01 15 Electric designed defective products. Products
 10:35:04 16 that were more dangerous than a reasonable person
 10:35:06 17 would expect.
 10:35:07 18 And you are going to hear evidence that
 10:35:07 19 there are certain dangers you certainly expect from
 10:35:10 20 working on this. If something is 700 degrees
 10:35:13 21 Fahrenheit, you expect to burn yourself if you are
 10:35:16 22 not careful. If you have a 400-pound valve and you
 10:35:17 23 knock it over, you are going to get hurt. If you
 10:35:20 24 put your hands in a moving part of a turbine, you

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10:35:22 1 are going to get hurt. But does an ordinary person
 10:35:26 2 expect that when they are working on this
 10:35:28 3 equipment, that they are going to get cancer?
 10:35:30 4 Well, you are going to hear from
 10:35:30 5 Dr. Brody. He's a molecular biologist, and he's
 10:35:32 6 going to come here to tell you about that. I think
 10:35:36 7 everybody has heard of it, but when I started
 10:35:39 8 learning about this, I did not realize it was
 10:35:42 9 actually a natural rock mined from the earth and
 10:35:45 10 put into different products.
 10:35:47 11 And he's going to tell you that the
 10:35:49 12 individual fibers that are lined up are invisible
 10:35:53 13 in nature. You cannot see them. You can't smell
 10:35:56 14 it. You can't taste it. It doesn't burn your
 10:36:00 15 throat or itch your skin. There is absolutely
 10:36:03 16 nothing about asbestos that tells you, Stop, you
 10:36:07 17 are working with something that could not only kill
 10:36:09 18 you but you could take home to your family and kill
 10:36:12 19 your family.
 10:36:14 20 The evidence will be that if someone
 10:36:15 21 does not tell you, if they don't put a basic
 10:36:19 22 warning that there is nothing that these users
 10:36:21 23 would know to give them a heads-up, it's dangerous.
 10:36:26 24 But the third claim that we have is we

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10:36:29 1 believe that John Crane -- excuse me -- the Crane
 10:36:33 2 Company and General Electric were negligent.
 10:36:36 3 And you are going to hear that asbestos
 10:36:38 4 was considered a miracle fiber. The fact that
 10:36:41 5 it -- you could not burn it, it was a great
 10:36:44 6 insulator, it was malleable, it was cheap, it was
 10:36:44 7 lightweight, all of the factors for why it was
 10:36:44 8 used.
 10:36:51 9 But you are also going to hear, without
 10:36:53 10 a doubt, that there was an alternative to using
 10:36:56 11 asbestos in these turbines and in these valves. It
 10:36:59 12 was called mineral wool, and mineral wool was
 10:37:03 13 available for every single product that Mr. Mulcahy
 10:37:06 14 worked on. It was more expensive, but it was
 10:37:10 15 available, and it did not have any of the health
 10:37:13 16 hazards associated with asbestos.
 10:37:15 17 How do I know that? Well, the evidence
 10:37:17 18 is going to be, you are going to see in Crane's
 10:37:19 19 manuals, that they knew about in 1923 the use of
 10:37:23 20 mineral wool as a thermal insulation. For General
 10:37:27 21 Electric, we actually have documents specific to
 10:37:29 22 the sites where Mr. Mulcahy works, and what General
 10:37:33 23 Electric does is says, We have specified a use of
 10:37:37 24 asbestos. We want asbestos used, and it's

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10:37:39 1 literally hundreds of pounds.
 10:37:39 2 But there was one area called
 10:37:40 3 Schedule B, where they actually said, I think it's
 10:37:43 4 better to use mineral wool. And ComEd, through
 10:37:47 5 their architecture firm, called Sargent & Lundy,
 10:37:49 6 said, Well, we prefer to use asbestos. And what
 10:37:53 7 you are going to hear is in that whole discussion
 10:37:56 8 where General Electric is recommending asbestos,
 10:37:58 9 talking about whether mineral wool should be used,
 10:38:01 10 talking about where insulation should go and
 10:38:04 11 getting drawings about it, they never once
 10:38:06 12 introduced the concept of safety.
 10:38:08 13 So when you decide between the two, they
 10:38:11 14 can think about cost, the functionality of it, but
 10:38:17 15 the last part of the picture about the dangers of
 10:38:19 16 the people that were working on it was never
 10:38:22 17 provided to General Electric, and they made the
 10:38:25 18 decision between mineral wool and asbestos.
 10:38:27 19 And at the end of the day, we are going
 10:38:29 20 to ask you to consider their negligence in using
 10:38:32 21 asbestos when mineral wool was available.
 10:38:34 22 The last thing I want to talk to you
 10:38:37 23 about in terms of what we have to prove is who they
 10:38:40 24 hurt, about Mr. Mulcahy.

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10:38:43 1 You are going to hear that asbestos can
 10:38:45 2 kill people in three different ways. It can cause
 10:38:51 3 asbestosis, which is shown here. Dr. Brody later
 10:38:51 4 this afternoon will talk about this in more detail,
 10:38:56 5 but that's a scarring of the lung.
 10:38:59 6 It causes lung cancer, which many of us
 10:39:01 7 are familiar with from smoking. It's the same
 10:39:04 8 disease.
 10:39:05 9 And worst of all, you are going to hear
 10:39:08 10 that it causes mesothelioma, which is not in the
 10:39:11 11 lung but in the lining of the lung called pleura.
 10:39:11 12 And I just want to make it clear, everyone knows
 10:39:14 13 smoking causes cancer, but this is a cancer that
 10:39:15 14 has nothing to do with smoking. This was a cancer
 10:39:18 15 that he died of only because he was exposed to
 10:39:21 16 asbestos.
 10:39:22 17 And Dr. Brody is going to come here and
 10:39:25 18 actually tell you, to the extent that science
 10:39:28 19 knows, how those fibers that are breathed in get
 10:39:31 20 into our lungs, the amazing way our body fights
 10:39:35 21 against them and gets 90 percent of them out but
 10:39:38 22 how ultimately it can get into our genes and our
 10:39:43 23 cells and causes mutations that cause cancer.
 10:39:46 24 And he'll explain that it has to be a

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10:39:48 1 series of mutations that literally takes decades,
 10:39:51 2 which explains the concept of latency you'll hear
 10:39:53 3 about in this case, why you can be exposed to this
 10:39:55 4 product let's say in the '60s and not find out you
 10:39:59 5 have cancer that's going to kill you until 2007,
 10:40:01 6 because all of those different cancers are
 10:40:04 7 occurring.
 10:40:04 8 And the difference in these diseases are
 10:40:07 9 important because you're going to hear those
 10:40:09 10 threshold limit values. Those limits the
 10:40:11 11 scientists put out in the 1940s and what the OSHA
 10:40:14 12 put out in 1970 were all directed at stopping this
 10:40:18 13 disease.
 10:40:20 14 Because you're going to hear that
 10:40:22 15 asbestosis requires a lot of exposure of asbestos
 10:40:25 16 to get enough scarring to create real problems and
 10:40:28 17 you also have the benefit of x-rays and you can
 10:40:31 18 determine the scarring's beginning, you can walk
 10:40:34 19 away from the situation and protect yourself.
 10:40:37 20 That's not the case with mesothelioma.
 10:40:41 21 There's no warning signs that tell you, "Stop. Get
 10:40:43 22 out. Save yourself."
 10:40:45 23 But, more importantly, you're going to
 10:40:47 24 hear that extraordinarily low exposures to asbestos

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10:40:51 1 cause mesothelioma. There are people that never
 10:40:54 2 worked with asbestos a day in their life but simply
 10:40:57 3 worked around other people that do that die from
 10:41:00 4 this disease. Wives that do the laundry of their
 10:41:06 5 husbands that work with asbestos just from doing
 10:41:09 6 their laundry die from mesothelioma.
 10:41:13 7 There have been studies that are called
 10:41:15 8 epidemiology, and they look at the whole population
 10:41:18 9 to try to figure out if there's a safe level of
 10:41:21 10 exposure to asbestos to prevent mesothelioma -- not
 10:41:24 11 asbestosis, mesothelioma -- and they can't find
 10:41:27 12 one. All they can say is because there's so much
 10:41:30 13 pollution from people using asbestos for so many
 10:41:32 14 years in this country that you go out in the street
 10:41:34 15 in Chicago and there's some asbestos in the air,
 10:41:36 16 and because we cannot isolate a population that
 10:41:39 17 hasn't been exposed, we don't know one way or
 10:41:41 18 another that background pollution causes disease,
 10:41:44 19 but anything above that can lead to someone dying
 10:41:48 20 from a horrible disease.
 10:41:53 21 To give you a little bit an idea of what
 10:41:56 22 this is, this is a picture of a healthy human lung,
 10:41:59 23 and the pleura is this (indicating). It's hard to
 10:42:02 24 tell, but what makes this shiny is your pleura.

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10:42:05 1 It's the lining of your lung. It's like the Saran
 10:42:08 2 Wrap you would use around a sandwich. It's
 10:42:11 3 supposed to be flexible and move with your lung,
 10:42:13 4 but when you get mesothelioma, your pleura changes.
 10:42:17 5 You have uncontrolled cell growth and get a tumor
 10:42:21 6 that makes it hard, and you're going to hear that
 10:42:24 7 that has two consequences; that as a tumor goes
 10:42:27 8 further and further out, it starts encroaching into
 10:42:30 9 your chest wall, which is lined with pleura, and
 10:42:33 10 that's the reason that mesothelioma is one of the
 10:42:36 11 most painful ways a person can die.
 10:42:39 12 They actually have used radiation not to
 10:42:41 13 stop the disease but to kill the nerves because
 10:42:43 14 there's no pain medicine strong enough to deal with
 10:42:46 15 it.
 10:42:47 16 But the second thing it does and what is
 10:42:50 17 deadly is the tumor gets harder and your lungs
 10:42:53 18 can't expand and you slowly suffocate to death.
 10:42:57 19 And this family will be telling you
 10:42:59 20 about that. Mrs. Mulcahy is not excited about
 10:43:06 21 getting on the stand, she's nervous about that, but
 10:43:09 22 she's coming here because her husband of over 50
 10:43:11 23 years died.
 10:43:15 24 And that gives you an idea of what he

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10:43:16 1 looked like just a little bit before he got this
 10:43:20 2 disease; that's what happened. That's a week
 10:43:25 3 before he died. Your body starts feeding the
 10:43:29 4 cancer and not you until you literally die.
 10:43:33 5 And when he found out he had this
 10:43:36 6 disease, they had to sit with the doctor and be
 10:43:38 7 told that regardless of how much chemo you do, what
 10:43:41 8 radiation you do, no matter how hard you fight
 10:43:44 9 this, this is a cancer that can't be beat.
 10:43:49 10 But in 1930 -- 1930 -- they had
 10:43:53 11 information that it could be prevented, that it did
 10:43:59 12 not have to happen.
 10:44:02 13 So how was Mr. Mulcahy exposed to
 10:44:03 14 asbestos? He was exposed to asbestos while he
 10:44:06 15 worked at Commonwealth Edison on General Electric
 10:44:09 16 and Crane equipment.
 10:44:10 17 That's an actual turbine generator
 10:44:13 18 opened up. They had taken off all the asbestos,
 10:44:18 19 and this is John Mulcahy working on the General
 10:44:25 20 Electric equipment.
 10:44:29 21 He worked at Commonwealth Edison for
 10:44:32 22 decades from 1952 to 1988. He worked at those
 10:44:37 23 different sites, and he died of mesothelioma, so he
 10:44:47 24 won't be able to testify as to what he did, but we

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10:44:47 1 found some of his coworkers, and at least -- all
 10:44:51 2 three of them told me they'll come. I don't want
 10:44:54 3 to bore you all to death, but they're going to come
 10:44:58 4 here and they're going to tell you two things. The
 10:45:01 5 first is part of the time they saw John Mulcahy
 10:45:02 6 working on this stuff firsthand working on valves,
 10:45:06 7 working on turbines, but his supervisor, for
 10:45:10 8 instance, wasn't sitting there watching him work
 10:45:12 9 all the time. His coworkers weren't sitting there
 10:45:15 10 watching him work all the time, so what probably is
 10:45:18 11 more important is what the duty of a maintenance
 10:45:22 12 mechanic was at Commonwealth Edison, all right?
 10:45:24 13 What kind of work they were doing when and how
 10:45:26 14 often, and what you're going to hear is over the
 10:45:29 15 span of literally 30 years, he was working
 10:45:32 16 regularly.
 10:45:39 17 When we talk about this -- I don't know
 10:45:43 18 if you're note-takers, but we have 13 boxes of
 10:45:46 19 documents, and we have a number at the bottom.
 10:45:48 20 Throughout I'm going to reference those, so if you
 10:45:51 21 ever want to look at the document yourself and
 10:45:53 22 verify what I'm saying, that's where you're going
 10:45:55 23 to be able to do it.
 10:45:57 24 This shows that General Electric

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10:46:00 1 turbines had Crane valves and Crane gaskets, which
 10:46:03 2 is Crane's gasket manufacturing company. This
 10:46:07 3 shows that General Electric sold the asbestos
 10:46:09 4 insulation, thousands of pounds of it, so you're
 10:46:11 5 going to hear that number throughout.
 10:46:13 6 And generally what you're going to hear
 10:46:16 7 is that especially in Will County, General
 10:46:19 8 Electric's turbine generators had tons of problems,
 10:46:22 9 and GE didn't just walk away after they
 10:46:25 10 manufactured, assembled, made these things; they
 10:46:27 11 kept coming back and supervised the work of 30 to
 10:46:30 12 50 maintenance mechanics, the exact job title of
 10:46:33 13 John Mulcahy. They were telling them what to do to
 10:46:36 14 fix this and never said a word.
 10:46:38 15 And there were two reasons they would
 10:46:39 16 come out. There was scheduled maintenance every
 10:46:42 17 year and a half to three years, those were for four
 10:46:46 18 to eight weeks of exposure, and you're going to
 10:46:49 19 hear just a day of exposure to this stuff can cause
 10:46:53 20 a person to die of mesothelioma. Over 30 years.
 10:46:56 21 But then there were also emergency
 10:46:58 22 situations where something wouldn't work, and you
 10:47:01 23 see in their records all sorts of things, the stop
 10:47:04 24 valve wasn't working, a steam pipe needed to be

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10:47:07 1 reinsulated, the insulation was loose-fitting, the
 10:47:10 2 diaphragm needed to be replaced and over and over
 10:47:13 3 again. Not including the scheduled maintenance,
 10:47:16 4 GE's coming in to work on the equipment, the job of
 10:47:20 5 a maintenance worker.
 10:47:26 6 The last thing I want to talk about is
 10:47:28 7 just what I think you're going to hear from General
 10:47:31 8 Electric and Crane. I don't think they're going to
 10:47:33 9 tell you asbestos insulation is safe, I don't think
 10:47:36 10 they're going to tell you that he somehow died from
 10:47:39 11 something else; I think the focus is going to be
 10:47:42 12 blaming other companies, and I think you're going
 10:47:44 13 to hear that Mr. Mulcahy spent four years in the
 10:47:48 14 Navy on the USS Shannan and the Navy used
 10:47:52 15 insulation.
 10:47:52 16 The Navy had very good reason to use
 10:47:54 17 insulation in wartime. You're never going to hear
 10:47:58 18 from a coworker to talk about what he did there,
 10:48:01 19 but you will hear that.
 10:48:02 20 You're also going to hear that there
 10:48:04 21 were other valves that were at all four of the
 10:48:06 22 sites that we're talking about. Crane was the
 10:48:12 23 predominate valve, but there were other valves.
 10:48:13 24 There were boilers, there was other insulation, but

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10:48:16 1 General Electric and Crane have an affirmative
 10:48:19 2 defense that the other exposure is the sole
 10:48:22 3 proximate cause, and here, because it's their
 10:48:24 4 defense, it's the first time I don't have the
 10:48:27 5 burden of proof, they do, and you're going to have
 10:48:28 6 to weigh the credibility of: Does it make sense
 10:48:31 7 that other people's insulation caused this disease
 10:48:35 8 but theirs didn't? And you get to develop that.
 10:48:39 9 All I'm going to ask is at the end of
 10:48:42 10 the day, hold Crane and General Electric
 10:48:44 11 responsible for the part they played in the
 10:48:46 12 problem, nothing more and nothing less.
 10:48:50 13 Now, you're going to hear about this
 10:48:53 14 through different experts. I already told you
 10:48:58 15 about Dr. Brody, who is the molecular biologist.
 10:49:03 16 He's the professor that teaches not only medical
 10:49:05 17 students but undergraduate students about biology.
 10:49:08 18 He literally speaks at conferences all over the
 10:49:11 19 country, and he's been asked to testify on this
 10:49:13 20 exact same matter in courts throughout the country.
 10:49:16 21 He doesn't have specific testimony to what
 10:49:18 22 Mr. Mulcahy did; he just explains how asbestos
 10:49:21 23 causes this disease.
 10:49:23 24 You then have Dr. Mark, who teaches

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10:49:26 1 Harvard medical students, and he's a pathologist
 10:49:29 2 who didn't treat Mr. Mulcahy but actually looked at
 10:49:31 3 his tissue and was able to confirm the diagnosis of
 10:49:35 4 mesothelioma, which no one disputes.
 10:49:37 5 And then you have Dr. Holstein, who is
 10:49:39 6 an occupational medical doctor. He's a medical
 10:49:42 7 doctor, but he has a specialty in not treating
 10:49:45 8 patients but figuring out how to prevent disease
 10:49:48 9 from happening, and he has studied his whole life
 10:49:51 10 since through 1976 specifically about diseases of
 10:49:53 11 asbestos.
 10:49:54 12 You're going to hear from a man named
 10:49:55 13 Irving Selikoff, and Irving Selikoff is important
 10:49:59 14 because he was one of the first people who did
 10:50:02 15 these epidemiological studies we talked about where
 10:50:04 16 he tried to study populations, and he would go to
 10:50:06 17 meetings and do medical examinations of people
 10:50:09 18 working with insulation in order to get scientific
 10:50:12 19 data about how many people will get sick.
 10:50:16 20 Dr. Holstein was one of the people that
 10:50:19 21 got him to do these medical examinations. Both --
 10:50:22 22 he started off doing them for scientific purposes
 10:50:25 23 only, and then other firms -- not mine but other
 10:50:28 24 firms have asked him to do it for litigation

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10:50:30 1 purposes.
 10:50:31 2 You're going to compare that to their
 10:50:32 3 expert, Dr. Betts, who is also an occupational
 10:50:36 4 medicine doctor who does not see patients, hasn't
 10:50:39 5 in nine years, doesn't even know in his entire
 10:50:43 6 history of treating someone with mesothelioma, has
 10:50:47 7 never done these medical examinations for
 10:50:49 8 scientific purposes, like Dr. Holstein. He only
 10:50:54 9 testifies for defense companies and makes a lot of
 10:50:57 10 money doing it.
 10:50:59 11 You're also going to hear from Marjorie
 10:51:01 12 Drucker. She's a representative of General
 10:51:03 13 Electric, and of all General Electric employees,
 10:51:06 14 they chose her to come talk about what General
 10:51:10 15 Electric knew about the dangers of asbestos. She
 10:51:14 16 worked for the company for one year from 1971 to
 10:51:17 17 1972. She's coming from Manhattan Beach California
 10:51:21 18 and being paid \$350 to give her perspective about
 10:51:25 19 what General Electric knew.
 10:51:27 20 And ultimately you and you alone can
 10:51:29 21 determine the weight of each one of these witnesses
 10:51:31 22 and what they're going to be.
 10:51:36 23 Two weeks is a long time, and I could
 10:51:38 24 tell by many of your faces when you were told you

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10:51:40 1 were going to be here it wasn't excitement that
 10:51:44 2 overcame you, but I want to say and Eva asked me to
 10:51:48 3 say thank you. I know some of you have done this
 10:51:52 4 numerous times, I know many of you are missing time
 10:51:54 5 from work and all of you from your lives, and I
 10:51:57 6 just -- this is incredibly important. This is the
 10:52:00 7 last time I get to talk to you until the very end
 10:52:03 8 one on one, and I want to say thank you.
 10:52:05 9 But the reason we're here is because
 10:52:07 10 we're going to hold these companies liable because
 10:52:10 11 the evidence will be that they sold and made
 10:52:12 12 products that they knew had to be scraped off,
 10:52:16 13 grinded, torn apart exposing Mr. Mulcahy to
 10:52:20 14 asbestos, and they actively made the decision to
 10:52:25 15 leave Mr. Mulcahy, who had no idea of the danger,
 10:52:29 16 in danger.
 10:52:32 17 I very much look forward to putting on
 10:52:33 18 the evidence and letting you know about him, and I
 10:52:38 19 thank you for your time.
 10:52:39 20 THE COURT: Thank you, Ms. Dean.
 10:52:41 21 Opening statement, GE, Mr. Fitzpatrick?
 10:52:45 22 MR. FITZPATRICK: May we have two minutes to
 10:52:55 23 set up?
 10:52:55 24 THE COURT: You may.

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10:53:19 1 (WHEREUPON, there was a short
 10:53:19 2 interruption.)
 10:53:19 3 (WHEREUPON, discussion was had
 10:57:34 4 off the record.)
 10:57:34 5 THE COURT: We'll go ahead and take our
 10:57:37 6 morning break, just, you know, a short one, about
 10:57:40 7 ten minutes.
 10:57:41 8 So see you back then.
 9 (WHEREUPON, the trial was recessed
 10 from 10:53 to 11:11 a.m.)
 11 (WHEREUPON, the following
 12 proceedings were had in open court,
 13 in the presence and hearing of the
 11:08:55 14 Jury, to wit.)
 11:08:55 15 MR. KING: Your Honor, if we could before the
 11:08:58 16 jury comes out, one of point of request for the
 11:09:00 17 defendants. We believe there was a misstatement of
 11:09:03 18 law in plaintiff's opening. We would ask for a
 11:09:07 19 curative instruction specifically that the burden
 11:09:08 20 of proof is on the defendants to establish sole
 11:09:10 21 proximate cause.
 11:09:11 22 We do not believe that is what Nolan
 11:09:14 23 stands for. We believe that the sole proximate
 11:09:16 24 cause issue is merely showing the failure of the

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11:09:19 1 plaintiff to meet their burden and that, in fact,
 11:09:22 2 other causes were the sole proximate cause.
 11:09:24 3 But to put the burden on the defendants,
 11:09:26 4 we believe is improper.
 11:09:29 5 THE COURT: And your response?
 11:09:30 6 MS. DEAN: Nolan explicitly calls it an
 11:09:34 7 affirmative defense. It's pled by at least Crane
 11:09:38 8 as an affirmative defense. What Nolan does say is
 11:09:40 9 to prove causation, under Thacker, it's the
 11:09:40 10 plaintiff's burden, but that is not what I said, I
 11:09:40 11 have to prove causation.
 11:09:45 12 If they are going to say something else
 11:09:46 13 was the sole proximate cause and they were not at
 11:09:48 14 all, that is an affirmative defense, and that is
 11:09:53 15 pled.
 11:09:53 16 MR. FITZPATRICK: Judge, I'm not here to
 11:09:55 17 reargue Nolan. I'm ready to go.
 11:09:57 18 THE COURT: And it's not your objection
 11:09:59 19 either. I understand that.
 11:10:00 20 MR. KING: Nolan clarifies the issue of
 11:10:03 21 whether defendants are permitted to put on evidence
 11:10:05 22 of other exposures. That is what Nolan opened the
 11:10:08 23 gate for. Nolan did not change the burden of proof
 11:10:10 24 on the plaintiff's burden to establish causation.

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11:10:13 1 All it does is it allows defendants to put on
 11:10:17 2 evidence that plaintiff does not meet their burden
 11:10:18 3 because there were other causes that were the sole
 11:10:21 4 cause.
 11:10:21 5 THE COURT: I tend to agree with you,
 11:10:23 6 Mr. King, however, it's my experience that that
 11:10:25 7 type of thing will add -- me admonishing them as
 11:10:31 8 such will add more than detract from the situation.
 11:10:34 9 I will allow you to make what you believe is a
 11:10:36 10 clarification in your statement, and I think that
 11:10:38 11 is the better way to handle it than it coming from
 11:10:41 12 me. Okay?
 11:10:42 13 MR. KING: Thank you, your Honor.
 11:10:44 14 THE COURT: Sure. Let's bring them out.
 11:10:44 15 (WHEREUPON, the following
 11:10:44 16 proceedings were had in open court,
 11:10:44 17 in the presence and hearing of the
 11:11:22 18 Jury, to wit.)
 11:11:22 19 THE DEPUTY: Please be seated. Thank you.
 11:11:28 20 THE COURT: Thank you. Welcome back,
 11:11:32 21 everyone.
 11:11:32 22 Mr. Fitzpatrick.
 11:11:32 23
 11:11:32 24

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11:11:32 1 OPENING STATEMENT ON BEHALF OF GENERAL ELECTRIC
 11:11:32 2 MR. FITZPATRICK:
 11:11:34 3 If it please the Court. Thank you, your
 11:11:36 4 Honor. Good morning, Ladies and Gentlemen.
 11:11:37 5 Luckily, our turbines and lightbulbs
 11:11:41 6 work much better than my laptop on that start.
 11:11:44 7 As you know, my name is John
 11:11:47 8 Fitzpatrick. With LaMar Jost, we have the
 11:11:47 9 privilege of representing General Electric.
 11:11:49 10 General Electric is a company that
 11:11:51 11 helped electrify this country. It helped power
 11:11:55 12 steamships. It helped win wars. That is what we
 11:11:58 13 do, and we are proud of it.
 11:11:59 14 And I will also tell you that the
 11:12:01 15 evidence will be we did not in any way cause this
 11:12:03 16 gentleman's disease. Plaintiff's thanked you
 11:12:06 17 initially when we got here. I know you did not
 11:12:08 18 volunteer and say, Boy, would I like to spend two
 11:12:12 19 weeks in court. No. And some of you have been
 11:12:13 20 here more than others, but you took an oath and you
 11:12:16 21 said, I will follow the law. You said, I'll be
 11:12:20 22 fair to both sides. You took that oath and said, I
 11:12:24 23 will be able to, and now it's time to do that. Our
 11:12:26 24 job will be to present evidence to you, and you

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11:12:29 1 will consider that.
 11:12:29 2 They are fine people. She had a fine
 11:12:32 3 husband. The Judge tells it right off, sympathy is
 11:12:35 4 not the issue here. The issue here is did these
 11:12:38 5 companies cause this problem. Did we hide the
 11:12:41 6 ball, as she said, which she claims.
 11:12:44 7 Now, a trial, as you know, is not innng
 11:12:49 8 by innng. They go all nine innngs. Or as my mom
 11:12:53 9 used to say, No matter how thin the pancake is,
 11:12:56 10 there are two sides. Sometimes I like to say, my
 11:12:56 11 name is really Paul Harvey. There are two sides to
 11:13:01 12 every story, and there are two sides even to
 11:13:04 13 asbestos, and that is what the evidence will be.
 11:13:08 14 Let's go through what the evidence will
 11:13:10 15 show you in this case. One, we start out with
 11:13:14 16 Mr. Mulcahy, you'll hear about his time in the Navy
 11:13:18 17 on a destroyer, a destroyer built in World War II.
 11:13:23 18 You will hear about his time at the Commonwealth
 11:13:27 19 Edison, probably one of the largest electrical
 11:13:27 20 companies delivering power to this state for years.
 11:13:29 21 That is what this case is about.
 11:13:31 22 Mr. Mulcahy passed away in November of
 11:13:33 23 2007. He had mesothelioma, 77 to 78. Fine
 11:13:40 24 gentleman. He had a history of prior cancer

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11:13:43 1 unrelated to asbestos. He had prostate cancer. He
 11:13:46 2 smoked for over 40 years. He had chronic
 11:13:49 3 obstructive pulmonary disease unrelated to
 11:13:53 4 asbestos. He had emphysema unrelated to asbestos,
 11:13:57 5 and he had pulmonary fibrosis, a scarring in his
 11:14:00 6 lungs, unrelated to asbestos. That is what he had
 11:14:03 7 to start.
 11:14:04 8 He served on the USS Shannon for four
 11:14:07 9 years, 1948 to 1952, a World War II destroyer. On
 11:14:11 10 that ship alone are over 40 tons of asbestos
 11:14:14 11 throughout the ship put on there by the Navy.
 11:14:17 12 He was then a boiler tender. That was
 11:14:20 13 his job. He fed those heaters, which helped drive
 11:14:25 14 turbines, but that was his job for four years.
 11:14:28 15 That had nothing to do with GE in this case.
 11:14:31 16 From that time, he then started ComEd.
 11:14:35 17 From 1952 to 1964, he worked at the Crawford &
 11:14:41 18 Ridgeland plants. He was exposed for 12 years to
 11:14:46 19 tons of asbestos insulation on boilers, pumps, and
 11:14:50 20 pipes. Nothing to do with GE.
 11:14:53 21 He was then a plant mechanic, yes, by
 11:14:57 22 '65, and a foreman at the Will County plant,
 11:15:00 23 regularly exposed to asbestos on boilers, piping,
 11:15:04 24 and equipment from daily duties have nothing to do

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11:15:07 1 with GE. What the evidence will be in this case,
 11:15:12 2 he may have assisted -- now, you saw that picture.
 11:15:15 3 There is no insulation when he's working on the
 11:15:18 4 blades. And you'll hear about how you have to even
 11:15:21 5 get to the blades, but he may have assisted on
 11:15:24 6 turbine maintenance during the outages. The
 11:15:27 7 turbines goes for about three to five years, and
 11:15:30 8 when you take them off-line, you can lose power.
 11:15:34 9 You need a crane to lift up the shell.
 11:15:36 10 That would happen about once every three
 11:15:38 11 to five years. You will also hear what ComEd did,
 11:15:42 12 is they would contract out and get union insulators
 11:15:42 13 to take off the insulation. And then the mechanics
 11:15:47 14 worked on the turbines. The mechanics don't take
 11:15:50 15 off insulation.
 11:15:52 16 So he may have walked by a turbine a few
 11:15:56 17 days in 26 years. That will be the testimony
 11:16:00 18 against GE. And working with this for almost three
 11:16:07 19 decades from the Navy and Commonwealth Edison,
 11:16:12 20 versus maybe a couple of days of walking by a GE
 11:16:16 21 turbine.
 11:16:17 22 Now, what is this case about? First of
 11:16:18 23 all, was he exposed? This is what you will have to
 11:16:21 24 determine. Was he exposed to and did he breath

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11:16:24 1 asbestos dust from insulation. Which she admitted,
 11:16:27 2 we don't make insulation. We are not Johns
 11:16:30 3 Manville. We were not Raybestos. General Electric
 11:16:33 4 never manufactured asbestos insulation.
 11:16:37 5 And did he breath enough dust in the
 11:16:40 6 late '60s to '70s, because that is what their
 11:16:43 7 testimony will be, on a GE turbine that we sold in
 11:16:46 8 the '50s to 1963, over a sufficient period of time
 11:16:49 9 to cause a disease. That will be the first
 11:16:51 10 question you have to answer, did he breath enough
 11:16:54 11 to cause his disease.
 11:16:55 12 Then if he did -- as she said, this is a
 11:16:59 13 failure to warn case. There will be no testimony
 11:17:02 14 from anybody saying there was a better substitute
 11:17:05 15 for asbestos or that our turbine could have been
 11:17:08 16 designed different. No one will testify to that.
 11:17:11 17 So the issue here is a failure to warn. That is
 11:17:14 18 what she said.
 11:17:15 19 Therefore, should GE -- was GE
 11:17:18 20 unreasonable, based on what was known. Remember,
 11:17:20 21 we told you about the old time capsule. We are
 11:17:23 22 going to talk about that. Based on what was known
 11:17:26 23 on science in the '50s and '60s, were we
 11:17:29 24 unreasonable for not warning about a product that

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11:17:31 1 we did not make, that may have been used on the
 11:17:34 2 turbines in the late '60s?
 11:17:36 3 Then if a determination is made, should
 11:17:38 4 we have warned, would a warning on a steel casing
 11:17:43 5 of a turbine that he may have worked on once a year
 11:17:45 6 or in a manual that he would never read, would that
 11:17:49 7 warning have changed his conduct? That is what
 11:17:53 8 they have to prove. Would have changed -- and, by
 11:17:57 9 the way, you will hear Johns Manville on their
 11:18:00 10 insulation was already putting a warning on it in
 11:18:04 11 '64.
 11:18:04 12 And then she talked about OSHA. We
 11:18:06 13 agreed by 1971 there were no secrets. The
 11:18:11 14 government regulated all of it. So would a warning
 11:18:13 15 have changed that? Then would that have prevented
 11:18:16 16 his cancer? That is what the warning is about.
 11:18:18 17 They must meet those steps.
 11:18:20 18 So what do we know? His working career
 11:18:23 19 starts in 1948. Four years as a boiler technician,
 11:18:27 20 not a turbine mechanic, a boiler technician for
 11:18:32 21 four years in the Navy, tons of insulation, nothing
 11:18:36 22 to do with GE.
 11:18:38 23 From '52 to '64, he's a boiler cleaner
 11:18:41 24 and a mechanic. Nothing to do with turbines for

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11:18:44 1 almost another 12 years. You will see the years
 11:18:47 2 that the GE units were installed at Will County,
 11:18:51 3 '55, '57, '63. He's still not even touching
 11:18:56 4 turbines.
 11:19:01 5 Then you'll hear about Johns Manville
 11:19:05 6 warnings going on their block and insulation
 11:19:07 7 because you'll see documents that that is what
 11:19:10 8 Sargent & Lundy called for. That is what they
 11:19:12 9 wanted.
 11:19:13 10 And then from '65 to '88, he's at Will
 11:19:18 11 County, he's doing maintenance all over on pumps
 11:19:21 12 and valves, nothing to do with GE. And 1971, she
 11:19:26 13 told you about OSHA. We agree. And for somehow
 11:19:29 14 for this period of time, maybe when a turbine
 11:19:33 15 outage every three to five years was done, those
 11:19:35 16 are the times that he walked by in this room in his
 11:19:39 17 career. A lifetime of asbestos exposures and maybe
 11:19:42 18 three outages. 26 years of exposure, and this is
 11:19:46 19 what they are claiming.
 11:19:49 20 All right. The Navy. Now, I think she
 11:19:54 21 told you in opening, GE never said -- I wrote this
 11:19:58 22 down, stop, get out, save yourself. That is what
 11:20:02 23 she said in opening. Hmm. The Navy -- he was a
 11:20:07 24 boiler tech responsible for operating boilers,

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11:20:12 1 steaming pipes that generates everything aboard
 11:20:16 2 those ships, onboard. That is what it does. Each
 11:20:18 3 Sumner class had 30 to 40 tons. Constant exposure
 11:20:22 4 every day. There is no GE folks. He did not get
 11:20:23 5 close to the turbines on ships.
 11:20:26 6 That is his ship. Tons of asbestos
 11:20:29 7 insulation. Stop, get off, save yourself, she
 11:20:36 8 said. Huh. This is what -- see that, that's
 11:20:41 9 asbestos, that's how ships operate. That his
 11:20:44 10 forward fire room. That's his forward fire room.
 11:20:48 11 That is the aft, the back part of it. Asbestos is
 11:20:52 12 on every pipe on that ship. The galley that he
 11:20:56 13 walks through in a ship is covered with asbestos,
 11:20:58 14 where he sleeps is covered with asbestos in the
 11:21:01 15 mess. Where he -- I'm sorry. That was where he
 11:21:06 16 eats. This is the berthing. The berthing where he
 11:21:10 17 sleeps, all of the pipes are covered with asbestos.
 11:21:12 18 Where he goes to the bathroom, pipes are covered
 11:21:13 19 with asbestos. That is what he did for four years.
 11:21:18 20 Stop, get out, and save yourself. That is what she
 11:21:24 21 said.
 11:21:28 22 Commonwealth Edison. What does a power
 11:21:32 23 plant do? These three power plants, it burns coal
 11:21:36 24 to boil water. The giant boiler creates steam, and

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11:21:40 1 then you have a steam cycle, and then they turn the
 11:21:44 2 turbines, which will generate electricity to power
 11:21:46 3 the state. You see right here, coal will come
 11:21:51 4 in -- I hope this thing works. All right.
 11:21:57 5 Coal will come in the boilers. You see
 11:22:00 6 the boilers. That will drive this turbine, GE
 11:22:04 7 turbine. Steam goes through the transmissions
 11:22:08 8 line, goes out. Then, of course, the water will
 11:22:11 9 come back to the river, power will go out, and that
 11:22:13 10 is what you have to help drive and create
 11:22:17 11 electricity in a power plant.
 11:22:19 12 High-pressure steam is hot. Miles of
 11:22:21 13 piping. In fact, to get an idea of how hot it is,
 11:22:25 14 you will hear that when there would be steam leaks,
 11:22:28 15 whether it was a Navy ship or whatever, people
 11:22:28 16 would take a broom and they would go like this
 11:22:31 17 because if you walked by a steam leak that was
 11:22:34 18 600 pounds, it will cut you in half. So you took a
 11:22:39 19 broom, and you knew where the steam leak was
 11:22:40 20 because that broom would catch fire.
 11:22:42 21 It protects the workers, she said. No
 11:22:46 22 debate. Thermal insulation is made out of
 11:22:48 23 asbestos. She called it the miracle fiber. It
 11:22:52 24 was. What you will hear, it's a naturally

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11:22:54 1 occurring fiber. It was woven into fabric, added
 11:22:59 2 to cement, insulation, because it would withstand
 11:23:01 3 temperatures actually as high as 2,000 degrees.
 11:23:03 4 Generally, up to 1,500 degrees for insulation.
 11:23:05 5 If you had boilers that would go 2,000
 11:23:08 6 to 3,000, you would put blocks and blocks and
 11:23:11 7 blocks of layers of asbestos, thousands of
 11:23:14 8 products. You will hear it was in gas masks for
 11:23:17 9 the Navy. Our seamen. That is what kept sulfuric
 11:23:22 10 acid out, crocidolite asbestos.
 11:23:26 11 I don't think the evidence will be when
 11:23:28 12 the gas was coming and you put on your mask, I'm
 11:23:32 13 sorry, Navy, stop, get out. That is what they
 11:23:35 14 used.
 11:23:36 15 The '40s and the '60s, now, we talked a
 11:23:40 16 little about it. If you take two aspirin, it will
 11:23:44 17 cure your headache. If you take 100, it might do
 11:23:44 18 more than cure your headache. The idea of a dose.
 11:23:48 19 There is doses of everything. We will eat food
 11:23:52 20 that actually has portions of traces of arsenic in
 11:23:55 21 it. It doesn't hurt us. But if you get a vial of
 11:23:56 22 arsenic, it's not good.
 11:23:58 23 You will hear asbestos, from the '30s,
 11:24:01 24 that she talked about, through the '70s, there was

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11:24:04 1 always considered a level that could be safe. A
 11:24:07 2 threshold limit value that was passed by 45 states,
 11:24:11 3 by the federal government, by the Navy. They said,
 11:24:14 4 This is safe.
 11:24:19 5 And then OSHA lowered the limits. OSHA
 11:24:22 6 did not ban it in '72. They said, Lower the
 11:24:27 7 limits. So that is what you will hear about
 11:24:29 8 asbestos, it was a miracle fiber. And, again,
 11:24:32 9 based on what was known then, the threshold limit
 11:24:36 10 value that you will hear about of 5 million --
 11:24:39 11 right now we have 0.1 fibers per CC. In other
 11:24:44 12 words, that level has come down about 600 times,
 11:24:47 13 but back in the '40s, '50s and '60s, that was by
 11:24:51 14 states, the government, the Navy. They all had it.
 11:24:53 15 It was essential to natural security.
 11:24:57 16 President Roosevelt signed a bill saying asbestos
 11:25:00 17 was one of the 13 materials critical to win the
 11:25:03 18 war. There was a war department section for
 11:25:05 19 asbestos. That is what asbestos was. There will
 11:25:10 20 be no debate on that. Okay?
 11:25:13 21 In addition -- by the way, GE loved to
 11:25:17 22 make turbines and, yes, GE loved to make a profit.
 11:25:21 23 In this economy, I hope someone is making a profit
 11:25:23 24 to keep us going. But here is what you are going

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11:25:25 1 to see, they did not go tell Commonwealth Edison
 11:25:28 2 how to run the plant. Commonwealth Edison hired a
 11:25:33 3 phenomenal designer, Sargent & Lundy, Stone &
 11:25:34 4 Webster because they are going to design the layout
 11:25:35 5 of the plant. They designed the plant. We agree.
 11:25:39 6 This was a proposal for Unit 2. Who
 11:25:43 7 would be supervising everything? Not GE, Sargent &
 11:25:47 8 Lundy. The work is conducted under the purchaser.
 11:25:51 9 It's Commonwealth Edison's plant. Sargent & Lundy
 11:25:55 10 is running it, and the union is running their own
 11:25:57 11 people. I don't think that any member who was a
 11:26:01 12 coworker was going to say, We would have loved to
 11:26:04 13 talk to GE as a union member. The unions tell us
 11:26:08 14 what to do. Commonwealth Edison tells us what to
 11:26:10 15 do, not GE.
 11:26:11 16 But it says here, We will follow
 11:26:13 17 Sargent & Lundy. We will submit designs to
 11:26:16 18 Sargent & Lundy. They are a tremendous
 11:26:19 19 organization. The drawings, consulting, that is
 11:26:22 20 who Commonwealth Edison is looking to. Those are
 11:26:25 21 the documents.
 11:26:29 22 So the exposure history from '52 to '61,
 11:26:33 23 he worked on boilers nine years, nothing to do with
 11:26:36 24 GE.

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11:26:40 1 Now, what about the boilers? You see
 11:26:43 2 the turbine. I mean, she did say, "massive,
 11:26:47 3 massive turbines." She said, "Well, hmm, they're
 11:26:50 4 the boilers." The boilers in this plant -- that
 11:26:54 5 whole plant is nothing but boilers. They've got a
 11:26:58 6 car, there are the boilers (indicating).
 11:27:00 7 That's what he worked in. Here's
 11:27:02 8 another picture of the boiler rooms. The whole
 11:27:05 9 thing, that's where the boilers are they run on
 11:27:14 10 steam (indicating).
 11:27:16 11 From '61, he was also a boiler mechanic,
 11:27:19 12 regularly exposed, nothing to do with GE. '65,
 11:27:30 13 again, regularly exposed.
 11:27:31 14 You'll hear the evidence that
 11:27:33 15 Johns-Manville was putting warnings on its products
 11:27:36 16 in May, and by '71, OSHA required employers to
 11:27:40 17 handle it.
 11:27:41 18 That's what you'd expect of any
 11:27:45 19 employer. There will be no failure to warn issue
 11:27:47 20 after '71. I think she admitted it. The
 11:27:50 21 government took over, okay, so we're looking at
 11:27:53 22 exposure period basically from '65 to '71.
 11:28:00 23 Okay. They were installed from '55 to
 11:28:02 24 '63. Asbestos was widely used, and no one

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11:28:06 1 considered anyone, unless you were an insulator
 11:28:09 2 working full-time, as even potentially being at
 11:28:12 3 risk.
 11:28:13 4 We generate power. The insulation is
 11:28:16 5 purchased for turbines. Now, there will be no
 11:28:19 6 debate, ladies and gentlemen, that the contracts --
 11:28:22 7 when GE sold those turbines, the contract would
 11:28:25 8 include "provide insulation." GE would contract
 11:28:28 9 out to someone to bring the insulation, insulate
 11:28:31 10 per the contract into the plant, put them up. We
 11:28:32 11 agree.
 11:28:38 12 Specifications. The specifications were
 11:28:42 13 all dictated by Sargent & Lundy, and that's fine.
 11:28:44 14 Turbines and appurtenances shall conform to the
 11:28:47 15 standards. She said it.
 11:28:48 16 The form B, Class B blankets, now, she
 11:28:51 17 mentioned about alternatives, mineral wool. There
 11:28:55 18 was a section on the turbine which I'll show you
 11:28:57 19 where GE recommended mineral wool not because it
 11:29:00 20 was a safety issue, not because it was safer;
 11:29:02 21 mineral wool only insulates up to 500 degrees, so
 11:29:05 22 after you've had four layers, you can put a
 11:29:08 23 different layer, and Sargent & Lundy said, "No, we
 11:29:10 24 want amosite asbestos. We want asbestos on

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11:29:14 1 everything, because it's the best insulation."
 11:29:16 2 Fine. That's what the evidence is.
 11:29:20 3 We will use Sargent & Lundy says amosite
 11:29:24 4 asbestos and that all the joints shall be filled
 11:29:25 5 with Johns-Manville cement. Here's the memo. We
 11:29:32 6 agree.
 11:29:33 7 Sargent & Lundy, the standard
 11:29:34 8 specifications that they supplied, states that this
 11:29:38 9 insulation proposed by General Electric is
 11:29:41 10 satisfactory with the exception we want this one
 11:29:44 11 section of the blanket to be mineral wool, but we
 11:29:47 12 won't take it. Sargent & Lundy says it must be
 11:29:49 13 amosite. Okay.
 11:29:53 14 So now let's talk about a turbine.
 11:29:55 15 Let's talk a turbine here. We have metal turbines.
 11:29:59 16 Casings would be lifted with a crane. That's how
 11:30:01 17 you get to it, the crane.
 11:30:04 18 Now, GE didn't make the pipes. She
 11:30:07 19 showed pictures of pipes and valves and pumps. I
 11:30:10 20 don't think you're going to hear any evidence of a
 11:30:11 21 GE pump. We don't make pumps, we make turbines.
 11:30:16 22 You would lift the casing and you would
 11:30:18 23 remove the insulation about every three to five
 11:30:21 24 years to check it. And the blankets are reusable.

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11:30:25 1 You take them off, you put them back on.

11:30:26 2 And Mr. Mulcahy may have been on a crew

11:30:30 3 that may have helped, because once the insulation

11:30:34 4 is removed, there's no exposure on metal blades.

11:30:42 5 No other insulation work on the

11:30:42 6 turbines. There's a turbine. Now, look at it.

11:30:45 7 There's no insulation on the outside. The

11:30:48 8 insulation is under, and I'll show you -- doggone

11:30:54 9 it -- there. You got to have a crane that comes

11:30:59 10 over to lift this thing off. You can eat on this.

11:31:03 11 There's no dust, there's no insulation. It's a

11:31:06 12 turbine room. Everything's underneath.

11:31:09 13 Another picture of the turbines, there

11:31:11 14 they are, and here's a picture you can see the

11:31:14 15 crane out there on the back. It's lifted that

11:31:17 16 casing. If I go back, you can see the casing. You

11:31:20 17 can see the areas up where the crane will come over

11:31:22 18 top, and we have now lifted that casing, and you

11:31:25 19 will see, since I'm having trouble with this

11:31:28 20 clicker, there's the insulation blanket. You can

11:31:32 21 see it's nailed in there. You take off the

11:31:35 22 blanket, there would be then block underneath.

11:31:38 23 That's all, underneath.

11:31:39 24 And there the blades is what you're

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11:31:42 1 going to work on. They're going to take it off,

11:31:45 2 the insulation contractors. That's our turbine.

11:31:49 3 But the plaintiff's case is we were

11:31:52 4 unreasonable for providing a warning about a

11:31:56 5 product we didn't make when practically everything

11:31:58 6 else has asbestos and that it was a significant

11:32:00 7 hazard to someone that no one considered to be

11:32:03 8 hazardous and that if we had provided a warning on

11:32:06 9 a turbine that somehow this would have changed what

11:32:10 10 he did, even though there were warnings already on

11:32:12 11 asbestos products, even though employers were

11:32:14 12 required and that somehow this warning would have

11:32:17 13 prevented his cancer even though he had 26-plus

11:32:20 14 year of working with asbestos for a few days, the

11:32:23 15 turbine. That's their case.

11:32:26 16 Okay. General Electric. Who are we?

11:32:32 17 Our founder, Alvin Edison, electrified this

11:32:35 18 country. We started the power lines that provided

11:32:37 19 power, provided generators that run trains. We

11:32:40 20 provided the equipment, turbines that ran those

11:32:43 21 ships in World War I and World War II. We provided

11:32:48 22 sites in our bombers. That's what we did. We had

11:32:51 23 the largest steam turbine, first x-rays. This is a

11:32:53 24 little bit about the company that she claims we

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11:32:57 1 hid -- remember she said -- she had a cute little

11:33:01 2 picture. That's what she had. GE hid. That's

11:33:04 3 what she told you. Let's see what GE hid.

11:33:09 4 Here's what you're going to hear. In

11:33:12 5 1922, the founder of occupational health, Dr. Alice

11:33:16 6 Hamilton -- and, ladies and gentlemen, when we talk

11:33:18 7 about stepping back in time, being a female

11:33:22 8 professor at Harvard in 1922 in industrial hygiene,

11:33:25 9 pretty unusual, like the only one. Pretty amazing.

11:33:30 10 And what does GE do? They go hire her. GE says --

11:33:34 11 the president goes to Alice Hamilton, said, "We

11:33:37 12 would like -- would you come and like a good

11:33:39 13 employer look at our plants, tell us what we need

11:33:42 14 to do. Give full reign, full access. You may look

11:33:47 15 at our plants and you tell us how to keep it

11:33:49 16 clean."

11:33:50 17 So she conducts the surveys. She

11:33:53 18 finds -- she's an independent consultant. Now,

11:33:56 19 1935, we're in a big depression, even bigger than

11:34:00 20 we are now.

11:34:01 21 MS. DEAN: Your Honor, we object to the

11:34:02 22 relevance.

11:34:03 23 THE COURT: Sustained. The jury should

11:34:05 24 disregard this comment about recession or economy

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11:34:08 1 at all.

11:34:09 2 MR. FITZPATRICK: I'll take 1935. She leaves

11:34:12 3 GE, she conducts national surveys. They call her a

11:34:16 4 gum-shoe detective. She brings her Harvard

11:34:18 5 students --

11:34:19 6 MS. DEAN: Your Honor, our objection is to the

11:34:21 7 relevance of GE's plants when the exposure happened

11:34:24 8 elsewhere, and believe they're opening the door to

11:34:25 9 bad things that happened there that --

11:34:27 10 MR. FITZPATRICK: Judge, she is --

11:34:29 11 THE COURT: That objection is overruled.

11:34:30 12 MR. FITZPATRICK: So they discover a case of

11:34:34 13 asbestosis, they do, and as a result, GE cleans up

11:34:38 14 their plant to say, "We've only had one case," and

11:34:41 15 then because of their actions, the State of

11:34:44 16 Pennsylvania adopts the GE actions and says, "This

11:34:47 17 is what we'd like all our plants to be." That's

11:34:49 18 GE.

11:34:52 19 What else does GE do? John Gimbel. He

11:34:57 20 contributes to one of the leading publications of

11:35:00 21 industrial hygiene. 1951, Dr. Sax publishes a book

11:35:05 22 that lists the TLV for asbestos for everyone to

11:35:08 23 see. That's what GE does.

11:35:10 24 John Grimaldi is appointed as a

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11:35:13 1 representative. She mentioned the National Safety
 11:35:15 2 Council. He wrote a book entitled "Safety
 11:35:18 3 Management" for employers to use.
 11:35:24 4 National Safety Council. She brought it
 11:35:25 5 up. We agree. We were a founding member. The
 11:35:28 6 mission was to exchange safety among manufacturers
 11:35:31 7 throughout the world. We published articles. It
 11:35:34 8 was so important, Congress recognized it as almost
 11:35:36 9 an arm of the government in 1953.
 11:35:39 10 Who belonged to it? Remember she said
 11:35:42 11 we hid it, the big secret. The United States
 11:35:45 12 Public Health, the U.S. Navy, the AFL-CIO, all the
 11:35:50 13 unions, everybody belonged to this organization
 11:35:52 14 which she claimed we hid information from. That's
 11:35:55 15 what she claimed.
 11:35:58 16 The National Safety Council even used a
 11:36:00 17 GE cartoonist to write books for kids on safety,
 11:36:08 18 and as the secretary of the Navy said, no industry
 11:36:11 19 has responded as well as GE to help us defend this
 11:36:15 20 country in World War II. That's what we did.
 11:36:19 21 So, now, what when were the hazards
 11:36:21 22 recognized? Remember she showed you the books.
 11:36:24 23 She didn't show you anything. So here's what the
 11:36:26 24 evidence is going to be.

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11:36:28 1 In summary, why I'm pointing to all this
 11:36:31 2 stuff, in 1930, there was a gentleman named
 11:36:33 3 Merewether. He studied the textile industry where
 11:36:36 4 they would weave the fiber into blankets, so these
 11:36:40 5 people, if you think about it, are using pure
 11:36:42 6 asbestos back in the '30s six, seven days a week,
 11:36:46 7 10, 12 hours a day, no ventilation, and they said
 11:36:49 8 if we get a level -- he proposed a TLV in 1930
 11:36:54 9 which you will hear is anywhere from 3 to 35 times
 11:36:57 10 higher than what we would even adopt. So they
 11:36:59 11 proposed it to manufacturing plants, nobody else.
 11:37:03 12 They passed regulations for textile factories and
 11:37:07 13 they said, "This is safe."
 11:37:08 14 And within two to three years after they
 11:37:11 15 pass those regulations, the Brits are saying,
 11:37:13 16 "These problems are a thing of the past. The
 11:37:15 17 disease is under control." 1934. That's what
 11:37:20 18 you'll see. That's the British experience.
 11:37:25 19 So from '34 to '69, the Brits were no
 11:37:29 20 longer concerned about asbestosis. They believed
 11:37:31 21 the disease was under control, there are safety
 11:37:34 22 regulations that apply to a textile plant, not to
 11:37:38 23 end products and anyone using them, and they never
 11:37:42 24 considered the possibility of low levels.

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11:37:44 1 The plaintiff will tell you -- and what
 11:37:46 2 they're doing is the level today and trying to
 11:37:48 3 impose that on 1930. That's not what happened.
 11:37:54 4 When were they recognized in this
 11:37:56 5 country? Remember, we kept a secret is what she
 11:38:00 6 said. 1938, the U.S. Public Health Service, the
 11:38:04 7 Surgeon General, they did a similar study in the
 11:38:06 8 textile plants in North Carolina. They came up
 11:38:09 9 with a level of 5 mill is safe. 5 million
 11:38:15 10 particles.
 11:38:16 11 You'll say, "What does that mean?"
 11:38:17 12 You'll hear testimony by an industrial hygienist --
 11:38:19 13 by the way, they are not going to call an
 11:38:21 14 industrial hygienist, they don't have any, but
 11:38:24 15 you'll hear what that level is. Suffice it to say,
 11:38:26 16 it's about 500 times higher than what we now have,
 11:38:30 17 because there's a level today.
 11:38:31 18 But you'll hear they thought it was
 11:38:33 19 safe. The Surgeon General, the American Conference
 11:38:37 20 of Governmental Industrial Hygienists in 1946 and
 11:38:40 21 up through the '60s would meet annually, and they
 11:38:43 22 adopted it. The states would adopt it. The Navy
 11:38:47 23 studied it and said it was safe.
 11:38:50 24 It was revisited, the Department of

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11:38:53 1 Labor adopted it, the government adopted it, all
 11:38:56 2 saying it was safe, and a world conference finally
 11:39:00 3 with Selikoff talked about when we've taken
 11:39:04 4 measurements, it's been 5, and again, we're looking
 11:39:07 5 at insulators. We're not looking at mechanics,
 11:39:10 6 we're talking about people who live with this and
 11:39:12 7 insulate day after day for a lifetime.
 11:39:15 8 You'll see 5 million particles. This
 11:39:18 9 goes on for years from '46 to the '60s.
 11:39:22 10 You'll hear about why the Navy used
 11:39:24 11 asbestos. There was nothing better. It was
 11:39:27 12 lightweight. It allowed us to put more guns on to
 11:39:30 13 help win the war. Here are the levels.
 11:39:32 14 Now, remember I told you about 5
 11:39:34 15 million. You'll see full surveys, band saw
 11:39:39 16 cutting, cement mixing, you'll see total dust
 11:39:42 17 counts and you'll see asbestos dust. Every one of
 11:39:45 18 the asbestos dust counts in a shipyard where they
 11:39:47 19 are swimming in this asbestos are below 5, and as a
 11:39:52 20 result, the Navy concluded insulators were safe.
 11:39:56 21 They kept using it.
 11:40:00 22 Threshold value, maximum concentrations
 11:40:02 23 which workers may be exposed to for an eight-hour
 11:40:05 24 working day without injury to health, that's how

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11:40:08 1 it's defined. Is it an absolute guarantee? No,
 11:40:13 2 but that was the best science, what medicine had.
 11:40:16 3 So the Public Health Service in '68
 11:40:19 4 thought it was safe, the American Conference and 40
 11:40:22 5 states adopted it, the medical/scientific
 11:40:25 6 literature said it was safe. Everyone thought it
 11:40:27 7 was safe.
 11:40:28 8 Even Dr. Holstein, their expert -- we'll
 11:40:30 9 talk about Dr. Holstein shortly -- agreed. There's
 11:40:33 10 no criticism of this through the '60s. No
 11:40:36 11 criticism by scientists saying, "This is bad."
 11:40:40 12 How about cancer? What you will hear,
 11:40:43 13 1949, the Journal of the American Medical
 11:40:46 14 Association said, "Well, we've studied this over a
 11:40:48 15 number of years, and there is potentially a risk if
 11:40:52 16 you first get asbestosis, so if you keep levels
 11:40:56 17 down and don't get asbestosis, you don't get lung
 11:40:58 18 cancer, because you need the underlying asbestosis
 11:41:01 19 to create a risk for lung cancer."
 11:41:03 20 Again, what were they looking at? 31
 11:41:06 21 deaths in 23 years. We were losing about a hundred
 11:41:10 22 thousand people in that year to lung cancer. We've
 11:41:13 23 got 31 deaths over 23 years, and they're making
 11:41:15 24 that conclusion. That's fine.

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11:41:17 1 And then they go over and check the
 11:41:19 2 Brits, and the Brits said, "We don't even have a
 11:41:23 3 hazard because of our levels. We believe there is
 11:41:25 4 no lung cancer hazard."
 11:41:27 5 Richard Doll you'll hear about, no
 11:41:30 6 hazard. Now, the first time you will hear
 11:41:32 7 mesothelioma mentioned is a gentleman by the name
 11:41:36 8 of Wagner in South Africa published in 1960 a fiber
 11:41:40 9 type called crocidolite. He said, "I'm beginning
 11:41:43 10 to see this." J-M begins to put warnings on,
 11:41:48 11 Mr. Mulcahy is promoted to a mechanic in '65, and
 11:41:51 12 then Selikoff publishes.
 11:41:52 13 And there will be no question, Selikoff
 11:41:54 14 is the preeminent researcher. Dr. Holstein, their
 11:41:59 15 expert, studied under him, and he will acknowledge
 11:42:00 16 there is no one better than Selikoff.
 11:42:03 17 There is the -- remember, she put up
 11:42:05 18 that warning that had "Danger." Those are warnings
 11:42:08 19 like in the '90s. Here's the warning in '64,
 11:42:12 20 "Danger, asbestos may be harmful," on the cement,
 11:42:17 21 the same thing, J-M cement, and here's Selikoff.
 11:42:18 22 Here's what you're going to hear.
 11:42:19 23 Remember she put all that, "We knew the
 11:42:22 24 dangers and we killed people in the '30s, we hid

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11:42:23 1 it," Selikoff says, "When we've taken dust
 11:42:27 2 measurements, the dust counts are generally within
 11:42:29 3 counts for asbestos fibers of 5 million particles.
 11:42:33 4 So as of '65 -- and, by the way, he's
 11:42:36 5 studying the union insulators. He's studying the
 11:42:39 6 folks who are most exposed. He says, "When I'm
 11:42:41 7 taking readings, it's still under 5. That's still
 11:42:45 8 safe."
 11:42:47 9 And they survey that literature that she
 11:42:50 10 put up, and here's actually what it says:
 11:42:53 11 Scattered case reports have been recorded about
 11:42:57 12 cancers in insulation, lung cancer and meso, a lung
 11:43:02 13 cancer was reported in a workman. These reports,
 11:43:04 14 while interesting and valuable, could not establish
 11:43:08 15 an association.
 11:43:10 16 The preeminent expert in 1965 published
 11:43:13 17 he didn't think there was an association. She put
 11:43:16 18 up, "Oh, everybody knew by the '30s." That's how
 11:43:19 19 people interpret literature.
 11:43:22 20 The head of the American Cancer Society
 11:43:24 21 says, "I believe nobody a few years ago would have
 11:43:26 22 thought there was a lung cancer risk in insulation
 11:43:29 23 workers."
 11:43:30 24 Now, remember, all of these studies are

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11:43:32 1 insulation workers. They are not mechanics who are
 11:43:35 2 walking by, they are textile workers who make it
 11:43:40 3 and are there all the time. We have insulation
 11:43:43 4 workers who are using the end products that have
 11:43:47 5 percentages of asbestos and then we have people who
 11:43:49 6 occasionally walk by, that's the concern, and they
 11:43:51 7 didn't even think insulators. Nobody thought.
 11:43:53 8 So what does Selikoff do? He goes to
 11:43:56 9 the union. He's obviously studying -- in '67, he
 11:43:58 10 gives talks to their national conference, and he
 11:44:00 11 says, "This is still safe." The man that their own
 11:44:05 12 expert will claim was the preeminent authority, we
 11:44:08 13 agree, he said, "Mesothelioma is so rare, I've only
 11:44:13 14 seen 3 in 30 years in my hospital, and we have a
 11:44:16 15 huge hospital. This is a hazard you just keep the
 11:44:20 16 dust levels down, you may keep working with the
 11:44:22 17 project."
 11:44:23 18 Selikoff, their expert, did not say,
 11:44:25 19 "Run for the hills," did not say, "Stop." He's
 11:44:27 20 telling his own workers, "You may keep working with
 11:44:30 21 it. Keep the levels down. And I've yet to see a
 11:44:35 22 lung cancer in someone who didn't smoke."
 11:44:37 23 Smoking started coming out -- you
 11:44:39 24 probably recall, at least if you're older, those

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11:44:41 1 warnings were coming out in the mid '60s.
 11:44:43 2 So you'll -- the evidence will show from
 11:44:46 3 '49 to '68, there was no concern. The U.S. had the
 11:44:50 4 same opinion. The risk was for textile workers,
 11:44:52 5 low levels were never considered an issue, and
 11:44:56 6 without underlying asbestosis, you were not at risk
 11:44:59 7 for cancer.
 11:45:00 8 OSHA, she mentioned, and it was good,
 11:45:04 9 1970 comes out and Congress passes it. "We're
 11:45:08 10 worried about personal injuries. We want to keep
 11:45:11 11 people safe. Responsibility, declare it's a
 11:45:16 12 national policy, we encourage employers and
 11:45:19 13 employees, the Secretary of Labor provide medical
 11:45:21 14 criteria."
 11:45:22 15 This was passed as the law of the land.
 11:45:27 16 Each employer shall do that. That's what employers
 11:45:29 17 do. There's no suggestion that GE ought to walk in
 11:45:33 18 someone's plant and tell them how to do their own
 11:45:35 19 safety program because every employer has to follow
 11:45:38 20 this.
 11:45:41 21 They established new levels, 5 fibers,
 11:45:44 22 you'll hear about that, which is about 80 percent
 11:45:47 23 less than the one in the '60s, but it's still 500
 11:45:51 24 times higher than what we have today. That's what

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11:45:53 1 they called safe.
 11:45:56 2 This is what they said to do,
 11:45:59 3 concentrations, how to comply, put warning signs,
 11:46:01 4 monitoring, medical exam and recordkeeping. This
 11:46:05 5 is all what an employer would have to do.
 11:46:06 6 Now, remember their allegation is, "Why
 11:46:10 7 didn't they just put a warning to wear a
 11:46:12 8 respirator? That's all you need to do."
 11:46:13 9 That's the comprehensive program on how
 11:46:15 10 to keep people safe. No one has disputed exposure
 11:46:18 11 to asbestos in high -- this is '72 -- can cause
 11:46:23 12 asbestosis and cancers. The dispute is to try to
 11:46:27 13 find a level safe. They're still looking for safe
 11:46:34 14 levels.
 11:46:28 15 So NIOSH publishes and NIOSH indicates,
 11:46:32 16 we have even put a safety factor. There is no
 11:46:35 17 guarantee, but we believe this new level will also
 11:46:38 18 protect against cancer. We are still using it.
 11:46:43 19 So engineering controls, mandated
 11:46:45 20 workplaces, employer surveillance. A warning does
 11:46:48 21 not do that. That is what the evidence will be.
 11:46:53 22 An employer warning sign. Companies who
 11:46:58 23 made the product were required to put labels on it,
 11:47:01 24 if you made it. The government never said, If you

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11:47:04 1 didn't make it, warn about somebody else's product.
 11:47:06 2 No. But if you make it, warn, and, Employers, you
 11:47:08 3 have to keep your place safe. So that was already
 11:47:13 4 in existence in '71.
 11:47:16 5 Personal protective. And they said, by
 11:47:19 6 the way, respirators, it's only -- well, compliance
 11:47:20 7 with these may not be achieved by use of
 11:47:24 8 respirators. In other words, you need to keep dust
 11:47:26 9 levels down. If a respirator is going to be used,
 11:47:26 10 it's temporary because you will hear people did not
 11:47:28 11 like to wear respirators. No one likes to wear
 11:47:31 12 them. So how do you avoid that? Keep levels down.
 11:47:34 13 And employers know how to do that. They had to
 11:47:38 14 establish the programs.
 11:47:39 15 Caution signs had to be put up, and here
 11:47:42 16 is what the government said about a warning sign.
 11:47:45 17 By the way, I'm not for Crane, but what the
 11:47:48 18 evidence is, they never had to warn. Nobody
 11:47:51 19 thought gaskets were an issue. They used gaskets
 11:47:53 20 into the '80s, but it says here, You have to put a
 11:47:56 21 warning if you use the product exceeding our now
 11:48:00 22 existing TLV. No warning is required if you have a
 11:48:05 23 product that has been bonded or coated. He'll talk
 11:48:08 24 about it. I'm not going to talk about his product.

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11:48:08 1 They didn't even have to warn. The gaskets.
 11:48:13 2 And here is the warning. That's it.
 11:48:15 3 The same warning that Johns Manville put on in '64,
 11:48:19 4 this is what the government says in '72 is a
 11:48:23 5 reasonable warning. Caution, avoid creating dust,
 11:48:31 6 breathing may cause harm. There will be no
 11:48:33 7 evidence that any equipment manufacturer had to
 11:48:37 8 warn about someone else's product. There were
 11:48:39 9 warnings on it. Moreover, warnings are not how you
 11:48:42 10 achieve things. You need a comprehensive program.
 11:48:46 11 You will hear the union knowledge, the
 11:48:48 12 IBEW, which Mr. Mulcahy was a member of. He was a
 11:48:52 13 member of this. And what is the evidence? Their
 11:48:55 14 own journals, 1971, Occupational Health --
 11:49:00 15 MS. DEAN: Your Honor, I'm going to object to
 11:49:02 16 the relevance of this, knowledge of other
 11:49:06 17 companies.
 11:49:06 18 MR. FITZPATRICK: Your Honor, we went through
 11:49:07 19 all of the journals. We had no objection to our
 11:49:12 20 openings.
 11:49:12 21 THE COURT: I'm going to allow this.
 11:49:14 22 Where are you with time,
 11:49:16 23 Mr. Fitzpatrick?
 11:49:17 24 MR. FITZPATRICK: What, ma'am?

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11:49:19 1 THE COURT: Your time?

11:49:20 2 MR. FITZPATRICK: I have about eight more

11:49:22 3 minutes.

11:49:22 4 THE COURT: Okay. Thank you. Overruled.

11:49:24 5 MR. FITZPATRICK: It says, The union is happy

11:49:26 6 we helped achieve it. What's the secret on

11:49:29 7 asbestos? They helped it.

11:49:30 8 Okay. The witness testimony. Ray

11:49:34 9 Rohder. We look forward to it. Turbine overhauls

11:49:36 10 every three years, he says. That is when you do an

11:49:39 11 overhaul, because the turbines work. Piping that

11:49:42 12 are located under that, you need a crane to pull it

11:49:46 13 off. I never recall seeing Mr. Mulcahy. I think

11:49:49 14 maybe he flipped a diaphragm, maybe he ran the

11:49:55 15 crane, but he never worked with insulation. That's

11:49:56 16 what Mr. Rohder says. And he would not maintain

11:49:57 17 the turbines, except for an outage, because you

11:50:00 18 have to take it off-line. So you have to look at

11:50:02 19 the turbines every three to five years.

11:50:04 20 Mr. Mazaika, he doesn't recall working

11:50:07 21 with Mr. Mulcahy. The outages were maybe every

11:50:10 22 year and a half to three. That is when you would

11:50:12 23 do it. Mechanics never had dealings with a GE

11:50:16 24 consultant, and the insulation is covered in a

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11:50:19 1 steel sheet, and we use JM products.

11:50:23 2 Mr. Bolek, he barely worked with

11:50:26 3 Mr. Mulcahy. He said only major outages. Now, he

11:50:29 4 work at Joliet. He did not work at Crawford, but

11:50:32 5 we are going to see when he comes to testify where

11:50:35 6 did he work. He said, I think I saw him several

11:50:39 7 times, I used JM, and he remembers safety training.

11:50:42 8 Okay. Plaintiff's experts. You are

11:50:44 9 going to hear Mr. Brody -- Dr. Brody today.

11:50:48 10 95 percent of what he does is for the plaintiff.

11:50:49 11 He has done it for 20 years. He testifies 30 to

11:50:53 12 36 times a year. He charges \$450. He makes about

11:50:56 13 \$200,000 to \$250,000 a year, and he has a script.

11:50:59 14 You will hear about his rat study. He

11:51:02 15 will talk about it. You will see a picture that is

11:51:03 16 about 20 years ago with his dark hair. It will be

11:51:06 17 there. You will hear about the rats and something

11:51:08 18 sweeping under the rug. That is what he does. He

11:51:11 19 does it all of the time.

11:51:12 20 Dr. Holstein. Here is their main

11:51:14 21 witness. He has done nothing but testify for the

11:51:16 22 plaintiffs. He makes about \$150,000 to \$300,000 a

11:51:19 23 year. What he did, he conducted mass screenings

11:51:22 24 for the lawyers. In other words, they bring them

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11:51:25 1 out of state, which he did not have a license to

11:51:28 2 do. They bring in all of the members, and he finds

11:51:30 3 everyone has asbestos and then he goes back to the

11:51:33 4 state. That is what he does.

11:51:35 5 He testified for the plaintiffs 150

11:51:37 6 times in the last 20 years, hundreds of

11:51:39 7 depositions, and plaintiffs tried to get him to

11:51:41 8 testify before Congress. He has no hospital

11:51:45 9 privileges. He has not published. He has no

11:51:47 10 research.

11:51:48 11 This is what you will hear. He forgot

11:51:51 12 to renew his license for three years. He didn't

11:51:54 13 have a license. So he saw patients and made

11:51:59 14 diagnoses without a license. He testified at trial

11:52:01 15 that he will tell you that it was a mistake. Yes,

11:52:04 16 I swore under oath to a jury that I had a license,

11:52:07 17 but I didn't. I just forgot. So he testifies to

11:52:11 18 it. That is Dr. Holstein.

11:52:15 19 Dr. Mark, 99 percent of the time for the

11:52:19 20 plaintiff, makes up to \$450,000 a year, and he will

11:52:24 21 testify and it's true, every exposure. He doesn't

11:52:26 22 know the level, he doesn't know the fiber, he

11:52:29 23 doesn't know what it was, but he will say that they

11:52:32 24 all contribute, but I can't support one article in

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11:52:35 1 the entire world literature to support that

11:52:39 2 opinion.

11:52:39 3 You will hear about Dr. Betts, 30 years

11:52:41 4 in the Navy, occupational medicine, boarded

11:52:45 5 toxicologist, industrial hygienist. Those are his

11:52:49 6 certifications that you will hear about.

11:52:53 7 Paul Banaszewski, 30 years with the

11:52:55 8 turbines. You will hear him talk about how

11:52:58 9 turbines operate. And Marjorie Drucker. She will

11:52:58 10 talk to you about what was known in the GE files.

11:53:02 11 In summary, Mr. Mulcahy was a boiler

11:53:04 12 mechanic. His meso was caused by decades of

11:53:08 13 exposure, had nothing to do with the GE turbine.

11:53:11 14 There was no reason for any equipment manufacturer

11:53:14 15 to warn about a product they did not make, based on

11:53:17 16 the medical science at the time. And by 70 OSHA

11:53:23 17 requires employers and insulation manufacturers to

11:53:26 18 warn, not a company that did not make the product.

11:53:28 19 There will be no credible evidence he

11:53:31 20 was exposed to any significant amount of asbestos.

11:53:34 21 There will be no evidence that GE was unreasonable

11:53:36 22 for not putting on a warning, and there is no

11:53:39 23 warning that GE could have given that would have

11:53:41 24 changed this because he had already worked with it,

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11:53:44 1 the warnings were already on JM, and the union and
 11:53:48 2 OSHA already knew.
 11:53:52 3 In sum, in this case GE, when you hear
 11:53:57 4 the evidence, is not responsible for that
 11:54:00 5 gentleman's death. That's what we will show, and
 11:54:03 6 we will show it based on the science at that time,
 11:54:05 7 not today, and we will show it through the
 11:54:08 8 witnesses. And I thank you for your time.
 11:54:11 9 THE COURT: All right. Thank you,
 11:54:13 10 Mr. Fitzpatrick.
 11:54:13 11 Mr. King.
 11:54:15 12 MR. KING: Your Honor, if I could just have
 11:54:18 13 hopefully 30, 60 seconds hopefully.
 11:54:21 14 THE COURT: We will see. Sure. Go ahead.
 11:54:21 15 OPENING STATEMENT ON BEHALF OF CRANE CO.
 11:54:21 16 MR. KING:
 11:54:59 17 May it please the Court, your Honor,
 11:55:04 18 ladies and gentlemen of the jury. It is a pleasure
 11:55:05 19 to speak with you again. As you recall, my name is
 11:55:07 20 Jeff King, and together with Mike Schalk and Sue
 11:55:11 21 Guntz, we represent Crane Co. and are vis-a-vis
 11:55:14 22 here doing that.
 11:55:14 23 Going last puts me at a little bit of a
 11:55:16 24 disadvantage. I was prepared to cover some of the

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11:55:16 1 topics that have already been addressed, so I will
 11:55:19 2 do my best not to repeat, which might mean I have
 11:55:24 3 to skip through a few slides, so I hope you will
 11:55:27 4 bear with me if I skip through them. That is
 11:55:29 5 trying to save some time here.
 11:55:32 6 First, I would like to say good morning,
 11:55:33 7 almost good afternoon, and, Ms. Mulcahy, you have
 11:55:34 8 our sincere sympathies. It is a terrible thing.
 11:55:39 9 This disease is terrible, but as you know in this
 11:55:41 10 court, we have to keep sympathies out. And we have
 11:55:44 11 a dispute to resolve, and that is what we are here
 11:55:47 12 to do.
 11:55:47 13 Now, I'm going to tell you a little bit
 11:55:49 14 about Crane, the company, the product, and the
 11:55:52 15 evidence that is going to come in regarding whether
 11:55:55 16 there was any exposure to it at Com Edison for
 11:56:00 17 which Crane Co. was responsible. Mostly, I'm going
 11:56:02 18 to tell you a little bit about what actually caused
 11:56:06 19 this disease. And I'm going to give you what I
 11:56:08 20 like to call, Asbestos 101. What is the evidence
 11:56:12 21 going to be that tells you what asbestos is, the
 11:56:16 22 different fibers types, and why it's very important
 11:56:17 23 to keep the fiber types and the type of product
 11:56:19 24 that you are considering in your mind at all times

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11:56:22 1 because the evidence is going to show you that not
 11:56:24 2 all asbestos is alike.
 11:56:31 3 We are going to hear a lot about the
 11:56:32 4 Navy. Why? I'll tell you why we are going to hear
 11:56:36 5 about the Navy. The evidence is going to be from
 11:56:38 6 their medical doctors that the earlier exposures
 11:56:41 7 are the most important exposures in the causation
 11:56:44 8 of mesothelioma. You are going to hear that his
 11:56:47 9 first exposures occurred in the Navy and his
 11:56:50 10 heaviest exposures occurred in the Navy. You are
 11:56:52 11 going to hear that his exposures in the Navy were
 11:56:56 12 to the worse type of asbestos, the amosite type
 11:57:00 13 that we are going to talk about.
 11:57:01 14 So on a ship that is literally covered
 11:57:03 15 with tons of asbestos, he starts his working life
 11:57:06 16 for four years, and that is where the heaviest
 11:57:08 17 exposures occurred, and that is what caused his
 11:57:11 18 mesothelioma. That is why we are going to talk
 11:57:14 19 about the Navy.
 11:57:16 20 Crane Co. did not make the products that
 11:57:19 21 caused Mr. Mulcahy's disease. It's very important,
 11:57:25 22 Crane Co. did not manufacture insulation, Crane Co.
 11:57:29 23 did not manufacture gaskets or packing. You heard
 11:57:32 24 Ms. Dean say something about granite. Granite was

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11:57:35 1 a product that was made by another company that
 11:57:39 2 Crane sold and sometimes installed in some of its
 11:57:43 3 valves. In this case, you are going to see the
 11:57:45 4 documents that she's referring to.
 11:57:49 5 I warn you to be very careful to pay
 11:57:51 6 attention to this. Granite is not an issue in this
 11:57:54 7 case. Why? That document that she's going to show
 11:57:57 8 you is going to say that Sargent & Lundy, the
 11:58:00 9 design engineers, they told Commonwealth Edison, we
 11:58:05 10 want you to install valves, piping, pumping,
 11:58:09 11 turbines, boilers that meet the following
 11:58:13 12 requirements.
 11:58:14 13 And when they got to the packing line
 11:58:16 14 and gasket line, what they said was, use granite or
 11:58:21 15 flexitallic or their equivalents. So what does
 11:58:25 16 that mean? It means that granite was one of the
 11:58:29 17 approved gaskets that could be used. I trust the
 11:58:33 18 evidence is not going to show that ever was. You
 11:58:36 19 are not going to have evidence that actually
 11:58:39 20 granite was there.
 11:58:40 21 Moreover, there's not going to be any
 11:58:42 22 evidence from any witness, coworker, et cetera,
 11:58:44 23 that Mr. Mulcahy ever worked with that product. So
 11:58:47 24 they are going to -- I anticipate they are going to

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11:58:51 1 focus on granite, and you have to be very critical
 11:58:54 2 of what you hear on that, please.
 11:58:56 3 So amosite is what caused this disease,
 11:58:59 4 and we are going to show that Mr. Mulcahy's
 11:59:02 5 lifetime exposure to asbestos from Crane Co. is
 11:59:06 6 insignificant and did not cause his illness. His
 11:59:11 7 exposures to -- the substantial exposures were
 11:59:16 8 dusty and more friable.
 11:59:17 9 You are going to hear "friable." That
 11:59:20 10 word means powdery, crumbly, falls apart when you
 11:59:24 11 touch it. I like to think of a chalk, but even
 11:59:24 12 lighter and fluffier than chalk. When you squeeze
 11:59:28 13 this friable material, it changes to powder. That
 11:59:31 14 is what the word "friable" means, and you are going
 11:59:34 15 to hear that throughout this trial.
 11:59:36 16 Whereas, gaskets and packing -- and let
 11:59:39 17 me stop right there and tell you what gaskets and
 11:59:42 18 packing are. This is a valve. This is a gate
 11:59:45 19 valve. It's probably a 3-inch gate valve. Gaskets
 11:59:53 20 are used when you put two pieces of metal together
 11:59:57 21 that are not moving. You put this gasket material
 12:00:00 22 between those two pieces of metal, and you squeeze
 12:00:04 23 them together real hard so that there is no leaks
 12:00:07 24 through that gap, through that joint.

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12:00:09 1 It could be a leak of water, steam,
 12:00:12 2 oxygen, whatever it is that is going through that
 12:00:15 3 piping system, cold water, hot water, steam, fuel
 12:00:19 4 oil, gasoline. A gasket prevents leaks between two
 12:00:23 5 fixed pieces of metal that are bolted together.
 12:00:27 6 Okay? These are examples of gaskets. You have
 12:00:28 7 probably -- many of you have probably worked with
 12:00:30 8 it. This is cork. That is one form of a gasket.
 12:00:31 9 By the way, none of these have asbestos, not that
 12:00:33 10 it would matter, because it's encapsulated, and
 12:00:36 11 until this day asbestos gaskets are not banned.
 12:00:37 12 There is no harm from them.
 12:00:40 13 Cork. This is a gasket. This is a
 12:00:42 14 paper-type gasket for a water pump for a car
 12:00:46 15 engine. So you put this on the engine block, you
 12:00:49 16 put the water pump to it, squeeze it together, and
 12:00:52 17 there is no leaks. This is the one that you have
 12:00:55 18 probably seen before. That is a water hose, garden
 12:00:59 19 hose washer. That type of washer is a gasket. You
 12:01:02 20 have the metal fitting at the end of the hose, you
 12:01:04 21 have got your spigot. You don't want leaks there,
 12:01:07 22 use one of these. This is a rubber gasket. So
 12:01:10 23 that is what gaskets are.
 12:01:13 24 Packing serves the same function, but

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12:01:14 1 you use it in a different place on equipment. When
 12:01:15 2 you have something that moves, in this case this
 12:01:20 3 wheel spins this shaft, which raises the gate that
 12:01:25 4 controls the valve. Well, you have a moving piece
 12:01:28 5 of metal, that shaft, going through a hole in the
 12:01:31 6 top of this valve. Whatever is going through this
 12:01:33 7 system is going to squirt up through that gap. You
 12:01:33 8 can't make it tight enough. If it was so tight to
 12:01:37 9 prevent a leak, you would not be able to turn the
 12:01:38 10 wheel. So what do you use? You use packing.
 12:01:41 11 Packing is pliable, and it usually comes in a
 12:01:45 12 ropelike situation.
 12:01:46 13 I'll show you what that looks like.
 12:01:48 14 This is a rope packing. The reason it is in the
 12:01:48 15 bag is, it's graphite covered. Graphite is oily,
 12:01:53 16 and I don't want to get it all over me and everyone
 12:01:54 17 else. That is a piece of packing that would go in
 12:01:57 18 probably a pretty large-sized valve. Packing is
 12:02:01 19 used in pumps and all sorts of equipment. It goes
 12:02:02 20 around big doors -- that would be a gasket.
 12:02:05 21 It's used in pumps, for any rotary or
 12:02:11 22 spinning type of connection. Valve here, sample
 12:02:15 23 valve. Important about valves, valves do not need
 12:02:18 24 to be insulated to work. It does not matter what

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12:02:21 1 is going through that valve, it does not have to be
 12:02:23 2 insulated. It's up to the user of the valve and
 12:02:27 3 the owner of the facility to decide whether they
 12:02:29 4 want to insulate that valve.
 12:02:31 5 So I'm going to try to move fast through
 12:02:33 6 some of the Navy issues. You need to understand
 12:02:37 7 why there was so much insulation on that ship. The
 12:02:40 8 reason was, the U.S. was at war. The ship he was
 12:02:45 9 on was called DD-25 -- sorry -- DD-737, converted
 12:02:49 10 to the DM-25. Built in 1944, in the middle of the
 12:02:55 11 war.
 12:02:56 12 The reason the numbers changed was
 12:02:57 13 because originally it was sumner class destroyer.
 12:03:02 14 The engineering plan and everything below deck was
 12:03:02 15 basically the same, but before it was put into
 12:03:05 16 service it was changed to be a minelayer. Hence,
 12:03:09 17 the switch from DD to DM. So you are going to see
 12:03:10 18 some documents that might say DM-25 or DD-737.
 12:03:16 19 It's the same ship.
 12:03:16 20 And a little bit of a location
 12:03:18 21 connection. I did not know this until I did some
 12:03:19 22 digging on the ship. This ship was called the
 12:03:21 23 Shannon, and it's named after Harold Shannon, who
 12:03:26 24 was born in Chicago in 1892 and he was in the

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12:03:30 1 Marine Corps from 1913 to '43. Just a little bit
 12:03:30 2 of interesting knowledge.
 12:03:34 3 Very important about the presence on the
 12:03:36 4 Shannon. Mr. Mulcahy was on from roughly March of
 12:03:39 5 '48 to roughly March of '52. You are going to hear
 12:03:43 6 evidence about what was going on, what he did on
 12:03:45 7 that ship. Mr. Fitzpatrick already told you a
 12:03:48 8 little bit about that.
 12:03:50 9 One thing he did not mention to you was
 12:03:52 10 there was a significant overhaul period. Overhaul
 12:03:55 11 is when the ship goes into the shipyard, and they
 12:03:58 12 basically revise stuff and fix everything that was
 12:04:01 13 not quite working or do periodic maintenance. You
 12:04:04 14 are going to hear evidence that during an overhaul
 12:04:07 15 on a ship, insulation, large quantities of
 12:04:11 16 insulation are ripped out and reinstalled and that
 12:04:14 17 the exposure to amosite during this massive repair
 12:04:19 18 project are huge.
 12:04:19 19 And you will see some of the numbers
 12:04:21 20 that show you how high these exposures were in
 12:04:24 21 enclosed machinery spaces, and Mr. Mulcahy was on
 12:04:27 22 board this ship during an overhaul that started in
 12:04:29 23 December of '51 and ended right after he got out of
 12:04:33 24 the Navy. So he was on board for three to

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12:04:36 1 four months during this overhaul.
 12:04:38 2 And you will also hear that a boiler
 12:04:40 3 tender, boiler technician on a ship of this type,
 12:04:44 4 at this time, spent his working day in the
 12:04:47 5 machinery spaces below deck and in an encased steel
 12:04:55 6 room that is full of asbestos. Here is a little
 12:05:00 7 bit about boiler tenders. You heard about that.
 12:05:03 8 The Navy made the decision to use
 12:05:05 9 asbestos for its ships. Why? Why did they need
 12:05:09 10 it? The reason asbestos came to be used on ships
 12:05:12 11 in such vast quantities stems from the Morro Castle
 12:05:19 12 fire. Morro Castle burned off the coast of
 12:05:23 13 New Jersey in 1934. 137 people died, and it washed
 12:05:26 14 up on the jersey shore, and here it is after the
 12:05:29 15 fire.
 12:05:29 16 International convention. How do we
 12:05:31 17 prevent these fires? The decision was asbestos.
 12:05:34 18 Asbestos is the best way to prevent fires on a
 12:05:36 19 ship. That is what led to the use of asbestos in
 12:05:40 20 such vast quantities on every ship built.
 12:05:43 21 Why? Lightweight. We told you about
 12:05:45 22 that. I believe you heard that earlier. Very
 12:05:47 23 light. It had incredibly strong insulating
 12:05:51 24 properties, and if a ship can save weight, they can

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12:05:54 1 put the weight elsewhere.
 12:05:56 2 Meaning, missiles, bombs, ammunition,
 12:05:59 3 guns, armor, thicker steel plates. The less weight
 12:06:03 4 they had to consume with insulation materials, the
 12:06:05 5 stronger, faster, more heavily armed ship that they
 12:06:09 6 could build. So the lightweight is very important.
 12:06:13 7 Heat and fire resistant. I just told you about
 12:06:13 8 that.
 12:06:15 9 Water resistant. They are in the ocean,
 12:06:16 10 so being impervious or resistant to mold, mildew,
 12:06:22 11 and rot was very important. Asbestos was great at
 12:06:26 12 all of that.
 12:06:27 13 And the Navy knew of -- as everyone else
 12:06:27 14 in the industry, medical-scientific communities,
 12:06:30 15 they knew of what the hazards were of asbestos, but
 12:06:33 16 they also knew how to control it. And they said,
 12:06:35 17 We can live with this, put it on the ship, we need
 12:06:38 18 it there, and they did.
 12:06:41 19 You will hear some evidence that the
 12:06:43 20 Navy knew as much or more than anyone else about
 12:06:46 21 the harms of asbestos and said, We can still live
 12:06:51 22 with this. Let's put it onboard the ship.
 12:06:53 23 And I'll get to it in a minute, very
 12:06:56 24 significant, that nobody in the medical,

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12:06:59 1 scientific, industrial and military communities
 12:07:04 2 thought that gaskets and packing were harmful at
 12:07:06 3 any time relevant to this case, and I'll show you
 12:07:10 4 those in a minute.
 12:07:11 5 Okay. You know the ship was full of
 12:07:13 6 asbestos. Working on a ship created a lot of dusty
 12:07:16 7 conditions, high fiber counts, especially during
 12:07:19 8 the overhauls. Asbestos thermal insulation would
 12:07:27 9 flake -- and you will get this from experts --
 12:07:27 10 during the firing of guns and regular pounding of
 12:07:30 11 the ship. Even in his berthing space, which is
 12:07:33 12 where they sleep, and in the mess halls, as the
 12:07:34 13 ship was going through the water, asbestos fibers
 12:07:37 14 were being released into the air.
 12:07:39 15 You are going to hear that the fiber
 12:07:41 16 content on board a ship is higher than anywhere
 12:07:45 17 else in industrial America, very, very high levels,
 12:07:48 18 especially during the overhauls.
 12:07:52 19 It's all over the ship. There is some
 12:07:54 20 piping. You saw this. I'm not going to belabor
 12:07:59 21 this. Note, though, there that valve is not
 12:08:02 22 insulated. Asbestos all around. The valve is not
 12:08:04 23 insulated. It's very important because in the
 12:08:04 24 industry and in the Navy, valves did not have to be

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12:08:07 1 insulated and sometimes weren't. You saw pictures
 12:08:10 2 like that, sleeping space, engineering space. A
 12:08:12 3 little more detail about the amount on this ship.
 12:08:15 4 I will have a document to show you this.
 12:08:18 5 Sumner class destroyer had over 34 tons. That's
 12:08:23 6 68,000 pounds of asbestos insulation in the
 12:08:27 7 machinery spaces alone. Those are machinery spaces
 12:08:30 8 where Mr. Mulcahy worked. Subgroups under that,
 12:08:33 9 amosite felt. That is a cloth made with this
 12:08:37 10 amosite material that you heard about, and 20 tons
 12:08:41 11 of pipe covering. Pipe covering are -- think of a
 12:08:43 12 straw. Slice the straw down the middle and then
 12:08:47 13 put it around another straw. That outside straw is
 12:08:49 14 your pipe covering. It could be an inch thick, it
 12:08:52 15 could be 4 inches thick. It's a half-moon shape.
 12:08:54 16 They put it around pipes and then they seal it up,
 12:08:56 17 and that is the insulation on pipes. You will hear
 12:08:59 18 pipe covering a lot. That is what we are referring
 12:09:01 19 to.
 12:09:02 20 In addition to the insulation and
 12:09:04 21 amosite inside the machinery spaces, that ship had
 12:09:11 22 27,000 pounds of asbestos outside of the machinery
 12:09:12 23 spaces, where everyone else slept, ate, work.
 12:09:17 24 Now Com Edison. You are not going to

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12:09:19 1 hear evidence about exposure to Crane or that Crane
 12:09:22 2 has any liability to the Navy, but what plaintiff
 12:09:26 3 told you is that they are looking to hold Crane
 12:09:27 4 responsible for Mr. Mulcahy's exposures at the
 12:09:30 5 ComEd plants.
 12:09:31 6 Here is what you are going to hear about
 12:09:33 7 ComEd as it pertains to Crane. First of all, I
 12:09:36 8 told you that we did not -- Crane did not
 12:09:39 9 manufacture insulation or gaskets or packing.
 12:09:43 10 Let's start with insulation. There is going to be
 12:09:45 11 no evidence in this case that Crane supplied any
 12:09:50 12 insulation that made it into the ComEd facility.
 12:09:54 13 Therefore, Mr. Mulcahy was not exposed to any
 12:09:57 14 insulation that Crane Co. sold to ComEd. Keep your
 12:10:03 15 eyes and ears open to that. There was no evidence
 12:10:05 16 of that.
 12:10:06 17 Gaskets and packing. I should start, we
 12:10:09 18 do not dispute that there are were Crane valves at
 12:10:12 19 these facilities. There definitely were. How
 12:10:16 20 many, where they were located, whether Mr. Mulcahy
 12:10:16 21 worked on them, that is a question and we are going
 12:10:19 22 to hear evidence on that, but we don't dispute that
 12:10:21 23 there were valves there. And we also don't dispute
 12:10:24 24 when the valves were initially sold to these

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12:10:27 1 facilities in the late '50s, when they were being
 12:10:30 2 built, they may have contained asbestos-containing
 12:10:34 3 gaskets and packing. May have.
 12:10:36 4 If Sargent & Lundy had required it and
 12:10:40 5 ComEd ordered it as such, fine. The valve might
 12:10:43 6 have made it to that facility originally containing
 12:10:48 7 asbestos gaskets and packing. However, due to
 12:10:50 8 normal maintenance and repair that gasket and
 12:10:53 9 packing is changed out. Whether it's after a day
 12:10:56 10 of operation, a leak develops or six months or a
 12:10:59 11 year after normal maintenance, this stuff wears out
 12:11:02 12 and is replaced. No one will dispute that.
 12:11:06 13 You are going to hear no evidence that
 12:11:09 14 Mr. Mulcahy was exposed to those original materials
 12:11:12 15 that Crane sold with these valves. He did not get
 12:11:16 16 to these facilities until years after those valves
 12:11:20 17 had been installed. The coworkers, not one of them
 12:11:24 18 is going to tell you that they thought he was
 12:11:26 19 exposed to original gaskets and packing. They are
 12:11:29 20 all going to tell you, we could not tell what we
 12:11:31 21 were pulling out and it was changed very
 12:11:33 22 frequently. So, therefore, you can't tell whether
 12:11:36 23 it was original.
 12:11:39 24 Three coworkers may show up, and I want

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12:11:41 1 you to listen very critically to what they say
 12:11:44 2 because it's one thing when the evidence comes in
 12:11:47 3 to say there were Crane valves there, but you can't
 12:11:50 4 stop there. You have to listen very, very
 12:11:52 5 carefully and answer the questions. Was he exposed
 12:11:55 6 to original materials that Crane supplied? And I'm
 12:11:59 7 going to suggest the evidence is going to tell you
 12:12:01 8 no.
 12:12:02 9 You are also going to be asked, Well,
 12:12:05 10 did Crane supply replacement gaskets and packing?
 12:12:09 11 The answer to that one is also going to be no.
 12:12:11 12 Mr. Bolek, if he shows up, he's going to say, Sure,
 12:12:14 13 I remember repacking valves, take the old packing
 12:12:18 14 out, put the new packing in. I remember doing that
 12:12:21 15 with Mr. Mulcahy. Okay. We don't dispute that.
 12:12:24 16 He's going to say, But I don't know if
 12:12:26 17 Mr. Mulcahy ever worked on a Crane Co. valve. He
 12:12:31 18 also doesn't know if -- at Joliet, one facility.
 12:12:35 19 He also says, I also don't know if there were any
 12:12:38 20 Crane Co. valves at the Will County facility, which
 12:12:41 21 is Mr. Mulcahy's home facility.
 12:12:43 22 You should know they had a home facility
 12:12:45 23 but occasionally worked at other facilities, if
 12:12:48 24 they moved and shifted assignments or were doing a

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12:12:51 1 repair outage. But his home facility was Will
 12:12:52 2 County. Mr. Bolek will tell you, I don't know if
 12:12:54 3 Crane Co. valves were at that facility.
 12:12:56 4 Mr. Rohder, I hope I'm pronouncing his
 12:12:58 5 name properly, he doesn't know how often
 12:13:01 6 Mr. Mulcahy worked on Crane Co. valves. He will
 12:13:05 7 mention packing -- sorry. Crane packing and he
 12:13:10 8 clarifies it. What he means -- and he says this in
 12:13:13 9 his prior testimony and he'll say it on the
 12:13:18 10 stand -- "I know I said Crane, but what I meant was
 12:13:22 11 a different company called Crane Packing Co." I'll
 12:13:24 12 show you a slide that shows the distinction. It's
 12:13:27 13 unfortunate that we have to confront this issue,
 12:13:28 14 but there is another company out there named Crane
 12:13:33 15 Packing Company. We're John Crane. They made
 12:13:34 16 gaskets and packing, and unfortunately, we shared a
 12:13:39 17 common name, so we have to be very careful which
 12:13:41 18 company we're talking about. He clarifies, "I'm
 12:13:43 19 talking about the other company."
 12:13:45 20 He doesn't recall seeing Mr. Mulcahy
 12:13:47 21 working on any valves that had flanges. Remember I
 12:13:51 22 talked about internal gaskets and packing? There's
 12:13:55 23 one other place you might have gaskets, and that's
 12:13:56 24 out here where the pipe connects, and four bolts

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12:13:58 1 would go in there and squeeze them together.
 12:14:00 2 He doesn't recall Mr. Mulcahy working on
 12:14:02 3 any flanges. In fact, he says most valves or many
 12:14:04 4 of the valves are welded, and if they're welded,
 12:14:05 5 there's no flange.
 12:14:07 6 Mr. Mazaika, he says, "The packing we
 12:14:10 7 used was John Crane --" that's the other company --
 12:14:12 8 "Chesterton and Garlock and the valves usually were
 12:14:17 9 insulated." It's an important point.
 12:14:21 10 Okay. There's going to be evidence that
 12:14:26 11 significant exposure to these products are what
 12:14:27 12 caused the disease both in the Navy and at Com Ed.
 12:14:30 13 Particularly in the Navy, you're going to hear from
 12:14:32 14 their experts that when he left the Navy, he
 12:14:36 15 already had enough exposure for the disease to
 12:14:40 16 start. He basically had mesothelioma starting
 12:14:44 17 based on his naval exposure.
 12:14:47 18 All right. A little bit about Crane Co.
 12:14:49 19 I think I mentioned yesterday that Crane Co.
 12:14:51 20 originated in Chicago over 150 years ago. It makes
 12:14:56 21 industrial valves and equipment. Crane Co. is
 12:15:00 22 people, assembly line workers, clerks, engineers,
 12:15:05 23 secretaries, mailroom workers, drivers, et cetera.
 12:15:08 24 It's a company just like any other.

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12:15:10 1 We made metal valves. We sometimes
 12:15:12 2 installed gaskets and packing depending on what was
 12:15:15 3 ordered and purchased. Crane Co. never mined,
 12:15:18 4 milled or manufactured asbestos product. The most
 12:15:23 5 it did is it possibly included them inside a valve.
 12:15:27 6 Different types of valves. I want to go
 12:15:29 7 through this very quickly. You need to be aware of
 12:15:31 8 this, because just because someone's working on a
 12:15:34 9 Crane valve doesn't mean that valve has gaskets or
 12:15:37 10 packing associated with it.
 12:15:39 11 There are different types of valves. I
 12:15:43 12 showed you this -- this is a cutout. The two
 12:15:45 13 things that are highlighted in yellow are where the
 12:15:47 14 packing would go on this gate valve, and that's --
 12:15:50 15 up top, as I showed you, is where the stem is
 12:15:53 16 spinning, and in this case, there's a bonnet
 12:15:56 17 gasket, which you can see where that horizontal
 12:15:58 18 line is where that is bolted down to the top valve.
 12:16:01 19 In addition, you might have the flange
 12:16:04 20 gaskets on the outside, which Crane Co. did not
 12:16:07 21 supply those valves. That's where the packing
 12:16:08 22 gaskets are located.
 12:16:10 23 Many different types of connections.
 12:16:11 24 Not all valves require flange -- gaskets at all.

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12:16:15 1 If they're bolted, they might; if they're welded,
 12:16:19 2 if there was pressure fitting, if they're
 12:16:21 3 screw-fitted, they don't require gaskets.
 12:16:23 4 So just because it's a valve does not
 12:16:25 5 mean there's automatically a gasket associated.
 12:16:28 6 The same with a bonnet. There might not be a
 12:16:31 7 gasket on the bonnet.
 12:16:33 8 Why is this important? Not all valves
 12:16:35 9 had internal gaskets, not all valves had stem
 12:16:37 10 packing. Some valves didn't have a spinning wheel.
 12:16:40 11 There was a closed stop-check valve that did not
 12:16:43 12 have a wheel. If there's no spinning wheel,
 12:16:45 13 there's no need for packing.
 12:16:47 14 Not all valves used a gasket on the
 12:16:50 15 internal connections and not all valves contained
 12:16:51 16 packing and gaskets that had asbestos in them.
 12:16:54 17 There were alternatives out there. You just
 12:16:56 18 supplied whatever the customer ordered. In this
 12:16:58 19 case, Sargent & Lundy specified that Com Ed was to
 12:17:01 20 use certain types of valves.
 12:17:03 21 Crane Co. never believed there was a
 12:17:05 22 need to warn about the valves that contained
 12:17:07 23 gaskets or packing -- asbestos gaskets or packing,
 12:17:12 24 and as I mentioned earlier, they were changed out

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12:17:14 1 many times before Mr. Mulcahy ever worked on a
 12:17:18 2 Crane Co. valve.
 12:17:18 3 Here's the slide I was referring to.
 12:17:21 4 Crane Co., Crane Company, is not John Crane and
 12:17:24 5 Crane Co. is not Crane Packing Company. That's one
 12:17:27 6 of the labels from one of their packing products.
 12:17:32 7 You see at the bottom "Crane Packing Company."
 12:17:34 8 That's where the confusion arises. Please, I ask
 12:17:36 9 you to keep that clear in your mind.
 12:17:38 10 A little bit about asbestos. You heard
 12:17:40 11 it's a rock or mineral mined from the earth.
 12:17:43 12 That's a mine in California.
 12:17:45 13 Multiple uses throughout the years. I
 12:17:47 14 won't read through them, many, many uses. Although
 12:17:50 15 the one I do like telling you about and the
 12:17:52 16 evidence will be this stuff was used in so many
 12:17:55 17 different uses, it was even in the snow that was
 12:17:57 18 used in theaters. Any of you know the Bing Crosby
 12:18:02 19 movie from 1954, White Christmas? That's the snow
 12:18:04 20 coming down outside the barn when it opens up. The
 12:18:08 21 Wizard of Oz, snow in the poppy field? That was
 12:18:11 22 asbestos, as well.
 12:18:12 23 It's still used today, all right? We
 12:18:17 24 are exposed to ambient and background asbestos

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12:18:20 1 everywhere. It's in every one of our lungs.
 12:18:22 2 You're going to hear that -- I'll get to the dose
 12:18:24 3 issue in just a minute -- but what is not in use
 12:18:27 4 today is that heavy quantities of amosite
 12:18:29 5 insulation.
 12:18:30 6 There are other restrictions on what's
 12:18:31 7 not used, but the biggest one that's relevant to
 12:18:34 8 this case that's been excluded is that insulation
 12:18:37 9 material, because that's what causes disease.
 12:18:39 10 I'm not going to read this. That's why
 12:18:42 11 the asbestos is used. We talked about that
 12:18:44 12 already.
 12:18:44 13 All right. This is very important.
 12:18:46 14 You're going to hear a lot from all the experts on
 12:18:49 15 both sides, plaintiff's experts and defense
 12:18:53 16 experts, about the different fibers.
 12:18:55 17 These are the three most common fibers.
 12:18:57 18 There's at least six that are out there, but these
 12:18:59 19 are the three you're going to hear about. Keep the
 12:19:02 20 one on the left separate from the two the right.
 12:19:04 21 The one on the left is chrysotile. It's
 12:19:06 22 part of what's called the serpentine family, okay?
 12:19:10 23 They're curly. The two the right, the amosite and
 12:19:15 24 crocidolite, those are grouped into a group called

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12:19:17 1 the amphiboles. Serpentine, amphiboles.
 12:19:22 2 You're going to hear the word "amosite"
 12:19:24 3 thrown about because that is typically what's in
 12:19:27 4 insulation. Crocidolite is a version of the
 12:19:29 5 amphibole, and you heard it mentioned it was in gas
 12:19:32 6 masks.
 12:19:32 7 Those two on the right are deemed very,
 12:19:35 8 very, very toxic, okay? Not one of the experts are
 12:19:38 9 going to disagree with that. They might disagree
 12:19:40 10 on the ratio of just how much worse is crocidolite
 12:19:44 11 and amosite and chrysotile, but no one is going to
 12:19:47 12 dispute that the ones on the right there are really
 12:19:49 13 nasty. The numbers are as high as 500, 800 to 1 in
 12:19:55 14 toxicity, meaning you'd need 800 fibers of
 12:19:59 15 chrysotile to have the same risk associated with
 12:20:01 16 one fiber of crocidolite. That's the relative
 12:20:05 17 risk, okay?
 12:20:08 18 To keep them clear, if you can remember
 12:20:09 19 this, I like to think of the "ites." Keep those
 12:20:13 20 together, the two "ites." It sounds like spike.
 12:20:15 21 The characteristics of those two on the side,
 12:20:18 22 they're dagger-like, they're sharp, they're
 12:20:21 23 straight. The one on the left, serpentine, it's
 12:20:25 24 snake like, spiral curly fiber. It's very

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12:20:29 1 important distinctions here.
 12:20:30 2 Look at what I have done here
 12:20:31 3 highlighted in red. Those are the chemical
 12:20:34 4 formulas for these compounds, for these three
 12:20:36 5 versions of asbestos fiber. The "ites," the
 12:20:40 6 amphiboles have "Fe." That's iron in it. The
 12:20:43 7 doctors are going to tell you why that's
 12:20:45 8 significant. That's significant because it impacts
 12:20:48 9 what it does in the body and how it stays in the
 12:20:51 10 body, and that's why chrysotile is not as toxic.
 12:20:54 11 That's one of the reason why it's not as toxic.
 12:21:01 12 The type of asbestos used in gaskets was
 12:21:04 13 chrysotile, okay? And it was encapsulated. It's
 12:21:08 14 not a loose fiber; it was embedded in binder,
 12:21:12 15 rubbers, et cetera. It looks like much like what
 12:21:14 16 you see here (indicating). This is just plain
 12:21:16 17 cork, but this could just as well be
 12:21:19 18 asbestos-containing gasket. Encased.
 12:21:23 19 Composition, I told you about the iron,
 12:21:25 20 it's in the amphiboles, not chrysotile. Here's
 12:21:29 21 some additional differences.
 12:21:30 22 In the breathing process, chrysotile
 12:21:32 23 breaks into small pieces. It's brittle and spiral.
 12:21:35 24 It breaks down smaller, smaller, smaller,

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12:21:37 1 significant because longer fibers are more
 12:21:39 2 dangerous. Chrysotile breaks down to little fibers
 12:21:43 3 very easily.
 12:21:44 4 Clearance. Clearance mechanisms clear
 12:21:47 5 stuff out of your body. You're going to hear that
 12:21:49 6 chrysotile clears more readily.
 12:21:51 7 Persistence, very important. There's a
 12:21:54 8 concept called half-life, and it's how much time
 12:21:57 9 does it take for half of the material that you have
 12:21:59 10 in your body to disappear. So if you have a
 12:22:02 11 thousand of something in your body, how long does
 12:22:04 12 it take to go down to 500? Well, the half-life for
 12:22:07 13 chrysotile fibers is measured in days and weeks,
 12:22:11 14 but the half-life for the "ites," the amphiboles,
 12:22:15 15 amosite, crocidolite, is measured in months or
 12:22:19 16 years or longer. Once they get in, they're
 12:22:21 17 staying. That's the difference between the fibers.
 12:22:26 18 Mr. Fitzpatrick mentioned dose, that the
 12:22:29 19 poison is in the dose. You're going to hear that
 12:22:31 20 phrase all the time.
 12:22:33 21 Asbestos diseases are all dose
 12:22:35 22 dependent, all right? Small doses are not
 12:22:38 23 dangerous. We all have fibers in our lungs right
 12:22:41 24 now, and not everyone here -- hopefully no one here

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12:22:44 1 has any asbestos-related disease. That's because
 12:22:46 2 those fibers are not causing the disease.
 12:22:49 3 At some point -- we don't know at what
 12:22:51 4 point, but at some point there's enough in a body
 12:22:54 5 to trigger a disease reaction.
 12:22:57 6 A couple examples. Aspirin, take two
 12:23:00 7 for a headache, it's not going to kill you, that's
 12:23:02 8 fine, but if you go home tomorrow night and down
 12:23:05 9 two bottles of aspirin, you're going to be dead.
 12:23:07 10 That's because the poison is in the dose. Your
 12:23:09 11 body can handle two aspirin, it can't handle 200,
 12:23:13 12 okay?
 12:23:13 13 There's multiple examples of that.
 12:23:15 14 Sunlight. A little sunlight's good for you, a lot
 12:23:19 15 is going to cause sunburn and possibly skin cancer,
 12:23:22 16 and we can go on and on about examples. Water,
 12:23:24 17 your body needs water, but you can die if you drink
 12:23:27 18 too much water. That's another example.
 12:23:30 19 So why is all this significant? Because
 12:23:32 20 of the gaskets and packing contain the least toxic
 12:23:35 21 fiber and because it's encapsulated, you're going
 12:23:38 22 to hear from the industrial hygienist that the
 12:23:41 23 amount of fibers that are potentially released from
 12:23:42 24 gaskets and packing that are worked with are so

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12:23:44 1 small that -- this becomes very important -- you're
 12:23:47 2 not going to get enough exposure of enough
 12:23:52 3 toxics -- toxic-type fiber to make any exposure to
 12:23:55 4 working on gaskets and packing causative to the
 12:23:57 5 disease. It's just not going -- it doesn't
 12:24:00 6 contribute. It's so minor, it's like taking an
 12:24:03 7 aspirin.
 12:24:05 8 Scientific evidence is going to show not
 12:24:07 9 all exposures are harmful. Background levels are
 12:24:10 10 everywhere, even in Illinois. The poison is in the
 12:24:12 11 dose. You must have sufficient exposure for that
 12:24:15 12 exposure to be causative, and the evidence is going
 12:24:18 13 to be gaskets and packing do not give you that
 12:24:20 14 sufficient dose.
 12:24:23 15 I think I covered that. Because of
 12:24:25 16 those factors, though, there's no duty to warn. If
 12:24:28 17 the product can't cause the disease and no one
 12:24:30 18 takes or should have known it causes a disease, how
 12:24:33 19 can you warn about a disease that you could never
 12:24:36 20 have fathomed it could cause?
 12:24:37 21 To this day, science -- there's a
 12:24:39 22 dispute today, but today, there are many who still
 12:24:42 23 believe gaskets and packing cannot cause this
 12:24:44 24 disease. I'm going to put this evidence in front

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12:24:47 1 of you. It can't cause that disease.
 12:24:48 2 So if that's your belief, how do you
 12:24:50 3 have a duty to warn about a disease that you
 12:24:52 4 believe it doesn't cause?
 12:24:52 5 State of the art. I mentioned this
 12:24:55 6 during the questioning yesterday. You need to put
 12:24:57 7 yourself back. What was acceptable in the '40s and
 12:25:00 8 '50s? A young child sitting in the front seat of a
 12:25:02 9 car without a seat belt, that was perfectly
 12:25:05 10 acceptable. You would never accept that today. In
 12:25:09 11 fact, it's illegal. Today they've got to be in the
 12:25:11 12 back seat, right?
 12:25:12 13 That's what you need to put your mindset
 12:25:13 14 in. Put yourself back in time, what was acceptable
 12:25:16 15 in the '40s, '50s when this plant was being built,
 12:25:19 16 because that's what you have to view and judge
 12:25:21 17 Crane Company's conduct and behavior, not what we
 12:25:25 18 know today.
 12:25:27 19 Very important about gaskets and
 12:25:29 20 packing. These studies, some of them are in the
 12:25:32 21 Navy, some are not. All concluded that gaskets and
 12:25:35 22 packing were safe. The Rieble memo was a Navy
 12:25:40 23 memo from 1968. Mr. Mulcahy is already working for
 12:25:45 24 ten years at the Corn Ed plants, and what is one of

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12:25:48 1 the biggest industrial, most knowledgeable medical
 12:25:48 2 and scientific community, the U.S. government, U.S.
 12:25:50 3 military saying? Safe.
 12:25:52 4 P.G. Harnes you're going to hear about.
 12:25:57 5 Bremerton study, 1978, Mr. Mulcahy has been working
 12:26:00 6 for 20 years. This is a study in a shipyard.
 12:26:02 7 Gaskets and packing are safe.
 12:26:03 8 The preeminent researcher on asbestos,
 12:26:07 9 Dr. Selikoff, we're going to hear a lot about him,
 12:26:10 10 his book in 1978 says gaskets and packing are safe.
 12:26:18 11 That's a little bit about the Rieblet
 12:26:19 12 memo. We'll talk about that during the trial.
 12:26:22 13 That's the Selikoff & Lee book.
 12:26:25 14 Quickly on our experts, you can't
 12:26:28 15 predict exactly who's going to come because it
 12:26:31 16 depends on how schedules play out and exactly who's
 12:26:33 17 needed, but we may see some or all of these. I'm
 12:26:36 18 just going to go through them very quickly.
 12:26:39 19 Admiral Sargent, retired rear admiral,
 12:26:44 20 commanded while he was in the Navy the engineering
 12:26:44 21 side of the house. He's going to tell you about
 12:26:46 22 the quantities of asbestos on the ship, he's going
 12:26:49 23 to tell you what the firemen and boiler tenders
 12:26:52 24 would have been doing on that ship and how the

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12:27:57 1 and say what is dangerous and what isn't and how
 12:27:59 2 dangerous is this and how much exposure is this one
 12:28:02 3 person experiencing and what do we need to do to
 12:28:05 4 protect them. She's done real-world studies and
 12:28:07 5 she's going to tell you gaskets and packing do not
 12:28:09 6 release harmful levels of asbestos.
 12:28:13 7 Charles Blake, certified industrial
 12:28:15 8 hygienist, will tell you about the knowledge that's
 12:28:19 9 out there in industry, commercial side, of the
 12:28:23 10 harms of asbestos, and he will tell you gaskets and
 12:28:25 11 packing are not friable and that they do not cause
 12:28:28 12 this disease.
 12:28:30 13 Please remember, the plaintiff has the
 12:28:31 14 burden of proof. Keep an open mind. There's two
 12:28:35 15 sides to every story. I know there's a Paul Harvey
 12:28:38 16 joke, and I think that's been used a couple times.
 12:28:41 17 Keep in mind the evidence is going to
 12:28:43 18 show there's nothing Crane Co. could have done to
 12:28:45 19 change Mr. Mulcahy's exposure in the Navy or Com
 12:28:50 20 Ed. Focusing on the Navy, that's what caused the
 12:28:53 21 disease, though, so that's why I stopped at the
 12:28:57 22 Navy.
 12:28:58 23 At the conclusion, the evidence is going
 12:28:59 24 to show you that gaskets and packing that were used

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12:26:55 1 products and the insulation were worked with and
 12:26:59 2 manipulated on that ship.
 12:27:00 3 Dr. Forman, Dr. Forman was under orders
 12:27:03 4 by the Navy to find out what the Navy knew about
 12:27:05 5 the harms of asbestos. He's going to tell you that
 12:27:08 6 the Navy knew as much as anyone, and here's what
 12:27:11 7 was known about asbestos and the harms, and he's
 12:27:13 8 going to tell you what was not known about gaskets
 12:27:16 9 and packing or what the state of the knowledge was
 12:27:18 10 on gaskets and packing; that is, that they were
 12:27:20 11 safe.
 12:27:21 12 He's also going to tell you that there
 12:27:23 13 were precautions that could have been implemented
 12:27:25 14 and would have prevented Mr. Mulcahy from being
 12:27:28 15 exposed to asbestos on the Navy but they just
 12:27:32 16 weren't implemented leading to his exposure.
 12:27:35 17 Dr. Graham is a doctor of pathology.
 12:27:37 18 He's going to tell you about the difference in the
 12:27:39 19 fiber types and why the chrysotile fibers and
 12:27:42 20 exposures from gaskets and packing do not
 12:27:44 21 contribute to this disease.
 12:27:47 22 Donna Ringo, certified industrial
 12:27:50 23 hygienist. A industrial hygienist studies toxins
 12:27:53 24 in the workplace. They're the people who go out

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12:29:02 1 with the valves were not contributing factors to
 12:29:05 2 Mr. Mulcahy's illness. Other more toxic, dusty,
 12:29:09 3 friable and potent asbestos products, mainly the
 12:29:13 4 insulations, are what caused his disease.
 12:29:16 5 Crane Co. didn't manufacture, supply any
 12:29:18 6 of the thermal insulation that he might have been
 12:29:20 7 working with and certainly didn't manufacture or
 12:29:23 8 supply any of the gaskets and packing that he was
 12:29:25 9 exposed to.
 12:29:26 10 Crane Co. valves were safe. Crane Co.
 12:29:28 11 exercised reasonable care, and because of
 12:29:30 12 everything I told you about gaskets and packing,
 12:29:32 13 there was simply no duty to warn.
 12:29:35 14 Now, plaintiff has the burden of
 12:29:38 15 establishing that we contributed -- Crane Co.,
 12:29:40 16 contributed to the cause. You're going -- there's
 12:29:42 17 going to be evidence out there that other items
 12:29:45 18 caused it and Crane Co. did not contribute.
 12:29:49 19 Plaintiff's burden is to establish that
 12:29:51 20 we contributed to that cause, so as you hear all
 12:29:54 21 the evidence, be very critical of what you're
 12:29:57 22 hearing, and I will trust you'll come to the
 12:29:59 23 conclusion again that Crane Co. didn't not
 12:30:02 24 contribute.

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12:30:03 1 I look forward to speaking to you at the
 12:30:04 2 conclusion of the trial. Thank you for your time.
 12:30:07 3 It's a very important service you're doing, and I
 12:30:08 4 do appreciate it.
 12:30:09 5 Thank you very much.
 12:30:10 6 THE COURT: Thank you, Mr. Crane.
 12:30:11 7 Ladies and gentlemen, your lunch is
 12:30:13 8 here. I will see you back here at 1:30.
 12:30:15 9 Please remember my admonition to you.
 12:30:18 10 Do not discuss this case at all, not with your
 12:30:20 11 fellow jurors or anyone else.
 12:30:22 12 See you at 11:00. Thanks.
 12:30:26 13 THE DEPUTY: All rise for the jury.
 12:30:26 14 (WHEREUPON, the following
 12:30:26 15 proceedings were had in chambers,
 12:30:26 16 outside the presence and hearing of
 12:30:26 17 the Jury, to wit:)
 12:35:30 18 THE COURT: Okay. We are all here.
 12:35:30 19 Mrs. Mulcahy, is there a reason that
 12:35:30 20 she's not at your table?
 12:35:30 21 MS. DEAN: She said she would feel more
 12:35:30 22 comfortable sitting in the back.
 12:35:30 23 THE COURT: Okay. Also, I see you are all a
 12:35:30 24 little cramped. If that projector goes higher,

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12:35:30 1 generally it goes real high on the wall anywhere
 12:35:31 2 you can separate the tables. It's just a
 12:35:31 3 suggestion I had for you. I don't know if you can
 12:35:31 4 get that projector higher.
 12:35:31 5 MS. DEAN: I can talk to Ryan.
 12:35:31 6 THE COURT: There was a motion about
 12:35:31 7 settlement -- settlement funds that were heretofore
 12:35:31 8 paid. Are you going to file a written response, or
 12:35:31 9 what is your position on that?
 12:35:31 10 MS. DEAN: Our position is if they are seeking
 12:35:32 11 the aggregate amount in the list of settling
 12:35:32 12 parties -- if we are ordered by the Court to do so,
 12:35:32 13 we will do so. There is confidentiality
 12:35:32 14 agreements, so there will be an order for the
 12:35:32 15 Court. That motion sought much more than that. It
 12:35:32 16 sought the actual settlement documents and
 12:35:33 17 individualized amounts.
 12:35:33 18 They could cite to no authority for that
 12:35:33 19 request, and I can't think of a reason why they
 12:35:33 20 would need that. The only reason they articulated
 12:35:33 21 was for setoff purposes and, therefore, the
 12:35:33 22 aggregate amount should be sufficient for that.
 12:35:33 23 The second issue that they brought up in
 12:35:33 24 that is bankruptcy trusts, and we can just tell the

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12:35:33 1 court there are none. I have been able to confirm
 12:35:33 2 and there are no trust documents.
 12:35:33 3 THE COURT: So Counsel's representation on
 12:35:33 4 that issue should suffice.
 12:35:33 5 Do you have any response as to the
 12:35:33 6 aggregate portion? I don't know who is arguing
 12:35:33 7 that.
 12:35:33 8 MR. KING: On the aggregate portion, I believe
 12:35:34 9 we are entitled to it. I don't need to seek terms
 12:35:34 10 of releases and settlement documents, but we are
 12:35:34 11 entitled to the aggregate portion. Timing is up to
 12:35:34 12 your Honor. Sooner is always preferred.
 12:35:34 13 On the other issue, I understand the
 12:35:34 14 representation of no bankruptcy trust filings, but
 12:35:35 15 if there are any filings by any counsel or
 12:35:35 16 individually by these plaintiffs for Mr. Mulcahy's
 12:35:35 17 injuries that they may not be aware of, we would
 12:35:35 18 ask that that be inquired of the plaintiff --
 12:35:35 19 MS. CABUTTO: There are none.
 12:35:35 20 MR. KING: -- directly. And it's not limited
 12:35:35 21 to bankruptcy trusts. Historically -- and I don't
 12:35:35 22 know if this is still going on. Historically, as
 12:35:36 23 part of any settlements, there was often a
 12:35:36 24 requirement that an affidavit of exposure be

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12:35:36 1 submitted with a settlement package.
 12:35:36 2 So I don't need the agreement that says,
 12:35:36 3 we release each other, the boiler plate release
 12:35:36 4 language, but if there is an affidavit or an
 12:35:36 5 admission of exposure as part of the settlement, I
 12:35:37 6 believe that we are entitled to that.
 12:35:37 7 MS. DEAN: While I disagree, it's moot. We
 12:35:37 8 don't have any of that.
 12:35:37 9 THE COURT: Okay. Very good. I don't want to
 12:35:37 10 box you from a time perspective, which is why I
 12:35:37 11 wanted to get on this as soon as possible. I'm
 12:35:37 12 going to grant their motion at this point. I'm
 12:35:38 13 going to ask that you have it by the end of the
 12:35:38 14 week, and if you have it hopefully by tomorrow,
 12:35:38 15 that should put that issue to rest.
 12:35:38 16 Okay. Have a nice lunch. I'll see you
 12:35:38 17 at 1:30.
 12:35:38 18 (WHEREUPON, at 12:35 the deposition
 12:35:38 19 was recessed until 1:30 this date,
 12:35:38 20 08/26/09.)
 12:35:38 21
 12:35:38 22
 12:35:38 23
 12:35:38 24

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1 IN THE CIRCUIT COURT OF COOK COUNTY, ILLINOIS
 2 COUNTY DEPARTMENT - LAW DIVISION
 3
 4 EVA MULCAHY, Individually and)
 5 as Special Administrator of the)
 6 Estate of JOHN MULCAHY, Deceased,))
 7 Plaintiff,)
 8 vs.) No. 08 L 6223
 9 3M COMPANY a/k/a MINNESOTA)
 10 MINING & MANUFACTURING COMPANY,)
 11 et al.,)
 12 Defendants.)
 13
 14 August 26, 2009
 15 1:39 p.m.
 16
 17 The Court met pursuant to recess.
 18
 19
 20
 21
 22
 23 BEFORE: HONORABLE CLARE E. McWILLIAMS.
 24

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1 PRESENT (Continued):
 2
 3 GUNTY & McCARTHY,
 4 (150 South Wacker Drive, Suite 1025,
 5 Chicago, Illinois 60606,
 6 1-312-541-0022), by:
 7 MS. SUSAN GUNTY, and
 8 MR. JAMES P. KASPER,
 9 -and-
 10 K&L GATES LLP,
 11 (Henry W. Oliver Building,
 12 535 Smithfield Street,
 13 Pittsburgh, Pennsylvania 15222-2312,
 14 1-412-355-6493), by:
 15 MR. JEFFREY S. KING, and
 16 MR. MICHAEL J. R. SCHALK,
 17 appeared on behalf of Defendant Crane
 18 Company.
 19
 20
 21
 22
 23 REPORTED BY: VICTORIA C. CHRISTIANSEN, No. 84-3192
 24 KRISTIN C. BRAJKOVICH, No. 84-3810.

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1 APPEARANCES:
 2
 3 SIMON EDDINS & GREENSTONE,
 4 (3232 McKinney Avenue, Suite 610,
 5 Dallas, Texas 75204,
 6 1-214-276-7680), by:
 7 MS. JESSICA DEAN, and
 8 MS. LAURA M. CABUTTO,
 9 appeared on behalf of the Plaintiff;
 10
 11 WHEELER TRIGG O'DONNELL LLP,
 12 (1801 California Street, Suite 3600,
 13 Denver, Colorado 80202-2617,
 14 1-303-244-1800), by:
 15 MR. JOHN M. FITZPATRICK, and
 16 MR. LaMAR F. JOST,
 17 appeared on behalf of Defendant
 18 General Electric;
 19
 20
 21
 22
 23
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1 (WHEREUPON, the following
 2 proceedings were had in chambers,
 3 outside the presence and hearing of
 4 the Jury, to wit):
 5 THE COURT: Okay. What are we here for?
 6 MR. SCHALK: Your Honor, on Monday we filed a
 7 motion. I don't know, this door is open, if we
 8 need to shut it.
 9 THE COURT: Yeah. You can shut it. Thanks.
 10 MR. SCHALK: We filed a motion on Monday, and
 11 the reason why we would like to have it heard at
 12 this point is because it affects Dr. Brody's,
 13 testimony and -- potentially affects Dr. Brody's
 14 testimony.
 15 It's generally his opinion that each and
 16 every exposure or some variant of that, whether it
 17 be each and every fiber, all of his exposures
 18 together caused Mr. Mulcahy's disease. And what
 19 they are doing here and what these witnesses do,
 20 including Dr. Brody and Dr. Mark and Dr. Holstein,
 21 is that they are trying to get past specific
 22 causation. We don't dispute in this case that
 23 asbestos caused Mr. Mulcahy's disease. That's a
 24 general causation. If they wanted to say, Asbestos

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13:39:37 1 caused his disease, we are fine with that.
 13:39:37 2 But when they start saying that each and
 13:39:37 3 every little bit of exposure cumulatively caused
 13:39:38 4 the disease, that is just saying, I can't segregate
 13:39:38 5 it out. I can't determine specific causation, as
 13:39:38 6 per defendant, and, therefore, I'm just going to
 13:39:38 7 say each and every one did cause it. It's an
 13:39:38 8 opinion that has been thrown out of three courts
 13:39:38 9 after they have taken week-long trials to review
 13:39:38 10 the opinion itself. Dr. Brody has been --
 13:39:39 11 THE COURT: Do you dispute his opinion that
 13:39:39 12 cumulatively this causes cancer, the asbestos
 13:39:39 13 exposure over time from various and sundry places?
 13:39:39 14 MR. SCHALK: Do we dispute that?
 13:39:39 15 THE COURT: Yes. Do you dispute that opinion?
 13:39:39 16 MR. SCHALK: Yes.
 13:39:39 17 THE COURT: Do your experts dispute that
 13:39:39 18 opinion?
 13:39:39 19 MR. SCHALK: Yes, they do.
 13:39:39 20 THE COURT: Okay. So why isn't it a battle of
 13:39:39 21 the experts?
 13:39:39 22 MR. SCHALK: Because that cumulatively is
 13:39:39 23 meeting their burden on general causation. When
 13:39:39 24 they say cumulatively -- sorry.

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13:39:39 1 THE COURT: That's all right.
 13:39:39 2 MR. SCHALK: -- it does not meet their
 13:39:39 3 specific causation burden to show that this
 13:39:39 4 defendant's products released enough dust to get to
 13:39:39 5 a level that can cause a disease.
 13:39:39 6 THE COURT: I guess my question, more
 13:39:40 7 specifically, then to you, is this a foundation
 13:39:40 8 objection, that he is not qualified to make this?
 13:39:40 9 Because, basically, if you are just not agreeing
 13:39:40 10 with it, that is not enough. You are fully at
 13:39:40 11 liberty to cross-examine him on this issue, and I'm
 13:39:40 12 sure your experts are going to opine as to the
 13:39:41 13 opposite, if that is their opinion.
 13:39:41 14 MR. SCHALK: Yes. But to meet the fraud
 13:39:41 15 standard, we are not disputing their qualifications
 13:39:41 16 to be expert witnesses in an asbestos case. But
 13:39:41 17 their opinions, their expert opinions have to be
 13:39:41 18 based on a developed scientific reason, and that is
 13:39:41 19 what these three courts in Washington State,
 13:39:42 20 Pittsburgh, and Philadelphia, Pennsylvania --
 13:39:42 21 THE COURT: You are, in effect, two minutes
 13:39:42 22 this witness is taking the stand asking me for a
 13:39:42 23 Frye hearing. Is that what you are doing? This is
 13:39:42 24 not going to happen.

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13:39:42 1 This was filed Monday, and here we are
 13:39:42 2 Wednesday at 1:30 about to approach your first
 13:39:42 3 witness and this is the first time I'm hearing of
 13:39:42 4 it. I'll take it under advisement as it comes up.
 13:39:42 5 I presume that if it is, in fact, you can lay the
 13:39:42 6 foundation and this expert has disclosed these
 13:39:42 7 opinions. It's a matter of not necessarily
 13:39:42 8 admissibility, but weight again, and it's subject
 13:39:43 9 to cross-examination.
 13:39:43 10 MR. SCHALK: If I may your Honor --
 13:39:43 11 THE COURT: Uh-huh.
 13:39:43 12 MR. SCHALK: -- we are fine if Dr. Brody can
 13:39:43 13 establish -- we can do a short voir dire outside
 13:39:43 14 the presence of the jury, if you would like. We
 13:39:43 15 would like Dr. Brody to explain to you the basis
 13:39:43 16 behind his each and every opinion. And if he
 13:39:43 17 couldn't support that with reasonable methods --
 13:39:44 18 Dr. Brody -- and we have it -- and he has done so
 13:39:44 19 in the past. His says, This opinion has never been
 13:39:44 20 scientifically tested, it's unsupported by any
 13:39:44 21 data, never been published in a peer-reviewed
 13:39:44 22 literature, and the concept itself is intuitive. I
 13:39:44 23 mean, that is a very big problem, allowing an
 13:39:45 24 opinion, based on the lack of all of those things,

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13:39:45 1 to go before a jury.
 13:39:45 2 THE COURT: I'll listen to his qualifications.
 13:39:45 3 At that point, you can renew this motion and make
 13:39:45 4 your objection, and if I feel it's necessary to
 13:39:45 5 take a voir dire back here, that is as far as it's
 13:39:45 6 going to go.
 13:39:45 7 It sounds to me that this was more
 13:39:45 8 over -- should have been the subject of a prior
 13:39:45 9 motion to bar or a Frye hearing or a separate
 13:39:45 10 motion in limine and not now.
 13:39:45 11 But I feel he's going to take the stand
 13:39:45 12 and he has got no requisite educational or expert
 13:39:45 13 background in this, I'll listen to you as far as
 13:39:46 14 barring it, but I suspect that is highly unlikely.
 13:39:46 15 All right.
 13:39:46 16 MR. SCHALK: Thank you, your Honor.
 13:39:46 17 THE COURT: Sure.
 13:39:46 18 (WHEREUPON, the following
 13:39:46 19 proceedings were had in open court,
 13:39:46 20 in the presence and hearing of the
 13:40:40 21 Jury, to wit.)
 13:40:40 22 THE CLERK: Please be seated. Thank you.
 13:40:42 23 THE COURT: Welcome back, ladies and
 13:40:43 24 gentlemen. Hope you had a nice lunch. We are now

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13:40:46 1 going to proceed with plaintiff's case in chief.
 13:40:49 2 Ms. Dean, your first witness, please.
 13:40:52 3 MS. DEAN: We would like to call Dr. Arnold
 13:40:55 4 Brody to the stand.
 13:40:56 5 THE COURT: Okay. Thank you. Good afternoon,
 13:40:59 6 Dr. Brody. If you could watch your step and come
 13:41:01 7 right around the reporters here.
 13:41:03 8 THE WITNESS: Thank you.
 13:41:05 9 THE COURT: Before you have a seat, you can
 13:41:08 10 come on up and step up here and we'll swear you in
 13:41:12 11 from here. Okay?
 13:41:13 12 (WHEREUPON, the witness was duly
 13:41:13 13 sworn.)
 13:41:22 14 THE COURT: Thank you. Please have a seat.
 13:41:23 15 If there's anything that you need during your
 13:41:25 16 testimony, please don't hesitate to let me know.
 13:41:30 17 THE WITNESS: Thank you.
 13:41:30 18 THE COURT: Ms. Dean.
 13:41:30 19 ARNOLD BRODY, Ph.D.,
 13:41:30 20 called as a witness herein, having been first duly
 13:41:30 21 sworn, was examined and testified as follows:
 13:41:30 22 DIRECT EXAMINATION
 13:41:31 23 BY MS. DEAN:
 13:41:31 24 Q. Good afternoon, Dr. Brody. Could you

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13:41:34 1 introduce yourself to the jury.
 13:41:35 2 A. Sure. My name is Arnold R. Brody. I'm
 13:41:39 3 a professor at North Carolina State University.
 13:41:42 4 Q. I have been calling you Dr. Brody. Are
 13:41:45 5 you a medical doctor?
 13:41:46 6 A. No. I'm a Ph.D.
 13:41:47 7 Q. And one of the things that I told the
 13:41:49 8 jury that you did was a cell biologist. Can you
 13:41:52 9 tell the jury what that means?
 13:41:53 10 A. Yes. Every living thing is made of
 13:41:56 11 cells. We need to understand what cells do. Every
 13:41:59 12 disease has what is called a target cell, from
 13:42:03 13 which that disease develops, so cell biologists
 13:42:06 14 like myself, we are interested in pathology, which
 13:42:09 15 is the next word. Pathology is the study of
 13:42:12 16 disease. Cell biologists can also understand
 13:42:16 17 diseased cells.
 13:42:17 18 Q. Have you spent most of your career
 13:42:20 19 studying the affect of asbestos on cells and
 13:42:23 20 tissues?
 13:42:23 21 A. I have. Yes, I have.
 13:42:25 22 Q. What I would like to do is talk about
 13:42:27 23 your qualifications. What is asbestos? What are
 13:42:30 24 the different types of asbestos? What diseases

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13:42:34 1 does asbestos cause? And how does asbestos cause
 13:42:37 2 disease?
 13:42:37 3 Are you prepared to talk about those
 13:42:39 4 subjects?
 13:42:39 5 A. Sure.
 13:42:40 6 Q. Okay. I would first like to hand you a
 13:42:42 7 copy of your curriculum vitae and ask you is that a
 13:42:48 8 fair and accurate copy of that?
 13:42:49 9 A. Yes, it is.
 13:42:50 10 Q. Okay. What is a curriculum vitae?
 13:42:54 11 A. This is a resume. This describes where
 13:42:57 12 I went to school and my employment history. It
 13:43:01 13 gives the titles of all of the papers that I have
 13:43:04 14 written over the years, where I have been invited
 13:43:07 15 to speak at various places.
 13:43:09 16 Q. And where do you currently live?
 13:43:11 17 A. In Raleigh, North Carolina.
 13:43:13 18 Q. And what do you do for a living?
 13:43:15 19 A. I'm a professor at North Carolina State
 13:43:18 20 University. I have what is called a basic science
 13:43:19 21 research laboratory. I have been teaching a lot of
 13:43:22 22 my career, but I don't have a regular teaching
 13:43:25 23 assignment now. But I have a laboratory where I
 13:43:28 24 have technicians and young students and young

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13:43:31 1 faculty who carry out basic science research.
 13:43:34 2 Q. Have you always been a professor at
 13:43:36 3 North Carolina State?
 13:43:36 4 A. Oh, no. I have a long academic history.
 13:43:40 5 Q. Where were you teaching before that?
 13:43:42 6 A. Okay. Just before that, I was at Tulane
 13:43:45 7 University in New Orleans, but I started my
 13:43:49 8 academic career as an assistant professor, that's a
 13:43:52 9 beginning professor, at the University of Vermont
 13:43:54 10 in the Northeast, and I was there for six years.
 13:43:58 11 I then went to the National Institute of
 13:44:01 12 Health for 15 years, where I was the head of the
 13:44:03 13 lung pathology laboratory.
 13:44:05 14 And then I went to Tulane as an -- as a
 13:44:09 15 full tenured professor. In 1999 I was promoted to
 13:44:14 16 vice-chairman of the pathology department in the
 13:44:16 17 medical school at Tulane. And you have probably
 13:44:20 18 heard about that little storm called Katrina that
 13:44:23 19 came rolling through New Orleans. That changed our
 13:44:27 20 lives as well as a lot of other people, and we
 13:44:29 21 relocated to North Carolina.
 13:44:30 22 And I accepted a position with North
 13:44:32 23 Carolina State University, and that was in 2006,
 13:44:35 24 and that is where I am today.

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13:44:37 1 Q. One of the things that you just said was
 13:44:39 2 that you were vice-chairman of the pathology
 13:44:41 3 department in the medical school. How is it that
 13:44:44 4 you were in the medical school if you are not a
 13:44:46 5 medical doctor?
 13:44:47 6 A. Right. So if you go to any medical
 13:44:48 7 school, any of the great medical schools in
 13:44:50 8 Illinois or anywhere else, and you'll see a number
 13:44:55 9 of Ph.D.s like myself who teach the basic sciences
 13:44:59 10 and who carry out basic science research. And we
 13:45:04 11 teach the basic sciences like physiology, anatomy,
 13:45:08 12 embryology, physiology, things like that to the
 13:45:10 13 medical students, so that is not at all unusual.
 13:45:13 14 It's a little unusual for a Ph.D. to be a
 13:45:17 15 vice-chair, but that has worked out for me at
 13:45:19 16 Tulane.
 13:45:20 17 Q. I want to backtrack a little bit and go
 13:45:22 18 through your educational background so the jury
 13:45:24 19 knows what you have kind of gone through.
 13:45:27 20 Starting with college, where did you go
 13:45:29 21 to college?
 13:45:29 22 A. After high school in New Hampshire, I
 13:45:31 23 went out to Colorado to do a Bachelor of Science
 13:45:35 24 degree in Zoology. Zoology is the study of

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13:45:38 1 animals. That was a Bachelor of Science degree.
 13:45:40 2 Then I went to the University of
 13:45:42 3 Illinois, downstate. I met the Mrs., who is from
 13:45:46 4 Chicago. We were there for two years, where I did
 13:45:50 5 a master of science degree in anatomy. Anatomy is
 13:45:54 6 the study of how our parts are put together, how
 13:45:58 7 they function. That was a Master of Science
 13:46:01 8 degree.
 13:46:01 9 I then went back to Colorado to do a
 13:46:03 10 Ph.D. in cell biology, the topic that we talked
 13:46:06 11 about earlier. Then I did three years of
 13:46:09 12 postdoctoral study at Ohio State University.
 13:46:12 13 Q. At some point in your career, did you
 13:46:14 14 become interested on the effects of asbestos on
 13:46:17 15 cells?
 13:46:17 16 A. Right. That was actually at the
 13:46:20 17 University of Vermont. That was in my first
 13:46:22 18 academic appointment.
 13:46:24 19 Q. Tell us what happened then.
 13:46:25 20 A. So there was a visitor to the department.
 13:46:29 21 at the University of Vermont. His name is
 13:46:32 22 Dr. Wagner. It is W-a-g-n-e-r. It looks like
 13:46:36 23 Wagner, but it's pronounced Wagner because he was
 13:46:39 24 from South Africa.

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13:46:43 1 Dr. Wagner had essentially discovered in
 13:46:45 2 1960 that asbestos causes mesothelioma. Now, there
 13:46:51 3 were mesothelioma cases before that, but he really
 13:46:54 4 put together the association between asbestos
 13:46:58 5 exposure and the cancer mesothelioma.
 13:47:00 6 So he was visiting the department and he
 13:47:02 7 saw the work that I was doing using different kinds
 13:47:04 8 of microscopes, and he asked me to come work with
 13:47:09 9 him in Wales in the United Kingdom, which is where
 13:47:12 10 he was at the time, and this was a great
 13:47:14 11 opportunity for me, and I took my young family
 13:47:16 12 there and I spent a summer working with Dr. Wagner,
 13:47:20 13 and he showed me that when you expose animals like,
 13:47:25 14 for example, rats to asbestos, they get all the
 13:47:27 15 diseases that people get, asbestosis, lung cancer,
 13:47:30 16 mesothelioma, so that meant we had a model to
 13:47:34 17 understand human disease.
 13:47:36 18 So that's where I got my start and
 13:47:38 19 interest in that disease.
 13:47:40 20 Q. Why were you using a rat model in order
 13:47:42 21 to learn about human disease?
 13:47:43 22 A. Well, that's what scientists do.
 13:47:46 23 First of all, by the time a person comes
 13:47:48 24 to the clinic decades after exposure, you don't get

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13:47:52 1 to see what's going on inside that person's lung.
 13:47:56 2 The only way to understand the process that went on
 13:47:59 3 in that person that brought that person to the
 13:48:02 4 clinic is by using what we call animal models.
 13:48:06 5 Just about every human disease has an
 13:48:09 6 animal model that allows us to understand these
 13:48:13 7 processes.
 13:48:14 8 Q. One of the things that was stated this
 13:48:17 9 morning by counsel is that you were going to put on
 13:48:20 10 a rat show.
 13:48:21 11 What do you think about that?
 13:48:22 12 A. Someone said I was going to put on a rat
 13:48:24 13 show?
 13:48:25 14 Q. Yes.
 13:48:26 15 A. That sounds --
 13:48:27 16 MR. FITZPATRICK: Objection, your Honor,
 13:48:28 17 relevance.
 13:48:29 18 THE COURT: Overruled.
 13:48:30 19 BY THE WITNESS:
 13:48:30 20 A. That sounds quite disrespectful not just
 13:48:33 21 to me but to science in general and I would say a
 13:48:38 22 misunderstanding of what science has done, if
 13:48:39 23 that's what that person said.
 13:48:40 24 That's what scientists do. We use rats

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13:48:44 1 and mice to understand human disease, whether it's
 13:48:46 2 tuberculosis or AIDS or muscular dystrophy or --
 13:48:52 3 name any of the human diseases. We use animals to
 13:48:56 4 understand those diseases.
 13:48:58 5 BY MS. DEAN:
 13:48:58 6 Q. And what time frame did you start
 13:49:00 7 working with Professor Wagner?
 13:49:01 8 A. That was 1974.
 13:49:04 9 Q. I've been kind of asking your opinions a
 13:49:08 10 little bit about, for instance, why you were using
 13:49:11 11 animal models.
 13:49:12 12 Can I ask you for any of the questions I
 13:49:16 13 give you that you keep them within a reasonable
 13:49:19 14 degree of scientific certainty?
 13:49:20 15 A. Of course.
 13:49:21 16 Q. Have you conducted any original
 13:49:26 17 research?
 13:49:27 18 A. Well, sure. I mean, that's what I do.
 13:49:29 19 When you ask, you know, what do you do
 13:49:31 20 as a scientist, in order to be successful, you have
 13:49:34 21 to attract money, funding -- the universities don't
 13:49:39 22 pay for my work, the universities give you a place
 13:49:43 23 to work, and what you have to do -- what the
 13:49:46 24 scientist has to do is to be able to attract

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13:49:48 1 funding from the National Institutes of Health on a
 13:49:53 2 national basis, and that's a very competitive
 13:49:56 3 process. Tens of thousands of applications are
 13:49:59 4 presented every year, and only about 10 or 15
 13:50:01 5 percent of them get funded.
 13:50:04 6 So that's a very important part of my
 13:50:06 7 work, and the only way that happens is by doing
 13:50:10 8 original research. In other words, if I have an
 13:50:12 9 idea, something that we know there's no answer for
 13:50:16 10 now in the open medical literature, there is no
 13:50:18 11 scientific answer to the question, then I have to
 13:50:21 12 propose experiments to find the answer to the
 13:50:24 13 question, and that's what I do.
 13:50:26 14 Q. How long has the National Institutes of
 13:50:29 15 Health been funding your research even despite this
 13:50:33 16 competitive process that they require?
 13:50:34 17 A. Right. So I started in 1978 being
 13:50:39 18 funded by the National Institutes of Health and my
 13:50:41 19 work has been funded by the NIH without
 13:50:45 20 interruption since then.
 13:50:46 21 Q. In relation to asbestos, what kind of
 13:50:49 22 research have you been doing?
 13:50:50 23 A. Say it again. Sorry.
 13:50:53 24 Q. Sorry. In relation to asbestos, what

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13:50:54 1 kind of research have you been doing?
 13:50:57 2 A. Yeah, sure. Well, when I started with
 13:50:59 3 Dr. Wagner decades ago, we knew that asbestos
 13:51:03 4 caused diseases, all these different diseases that
 13:51:06 5 we've heard about, but despite that knowledge, we
 13:51:09 6 had no idea where the fibers go in the lung. We
 13:51:12 7 knew the fibers went in the lung, but where did
 13:51:14 8 they go, and once they got in there, how did they
 13:51:17 9 injure the cells of the lung?
 13:51:19 10 That's the way the work started. Those
 13:51:21 11 are the kinds of questions.
 13:51:23 12 Now jumping ahead 20-some-odd years,
 13:51:26 13 we're into the genetics of asbestos disease, what
 13:51:29 14 is it that makes a person susceptible? Why do some
 13:51:33 15 people get disease and some don't? How does
 13:51:36 16 asbestos cause genetic damage that leads to these
 13:51:39 17 cancers like mesothelioma and lung cancer?
 13:51:42 18 Q. Has this -- have you before today with
 13:51:47 19 this jury gone and discussed your research in terms
 13:51:50 20 of figuring out how asbestos causes disease in
 13:51:53 21 courtrooms before?
 13:51:54 22 A. Oh, many firms.
 13:51:56 23 Q. Have you ever done that for my firm?
 13:51:57 24 A. I have.

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13:51:58 1 Q. Have you ever done that on behalf of
 13:52:00 2 asbestos-manufacturing companies?
 13:52:01 3 A. I have.
 13:52:01 4 Q. Do you remember any of those companies?
 13:52:03 5 A. Oh, sure. U.S. Gypsum and FlintCoat and
 13:52:09 6 John Crane. There were several others. I'm sure I
 13:52:14 7 could think of them.
 13:52:15 8 Q. Sir, to be fair, do you spend most of
 13:52:18 9 your time in the courtroom at the request of
 13:52:20 10 plaintiffs' firms alleging someone got hurt as a
 13:52:24 11 result of asbestos exposure?
 13:52:26 12 A. That's right.
 13:52:26 13 Q. Can you tell the jury whether you're
 13:52:28 14 paid for your time here today?
 13:52:29 15 A. Of course I am.
 13:52:29 16 Q. How much?
 13:52:30 17 A. \$475 per hour.
 13:52:32 18 Q. Mr. Fitzpatrick indicated that you earn
 13:52:36 19 several hundred dollars a year doing this type of
 13:52:40 20 work.
 13:52:40 21 Is that true?
 13:52:41 22 A. That's right.
 13:52:42 23 Q. Can you tell the jury whether outside of
 13:52:44 24 this courtroom here in Illinois there are other

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13:52:47 1 courts that have allowed you to come and testify
 13:52:49 2 about your expertise in cell biology?
 13:52:51 3 A. Oh, from coast to coast, absolutely.
 13:52:53 4 Q. Can you give examples of some of the
 13:52:55 5 states that have allowed you to come in as an
 13:52:57 6 expert to talk about this matter?
 13:52:59 7 A. Sure. I've been in California many
 13:53:01 8 times, Texas many times, Florida a number of times,
 13:53:04 9 Illinois, of course. I've been in Wisconsin and
 13:53:10 10 Florida and North Carolina and South Carolina, I
 13:53:17 11 think, and Connecticut, New York. Probably a
 13:53:24 12 couple of others, but that's certainly most of
 13:53:27 13 them.
 13:53:28 14 Q. How about outside of the courtroom? Is
 13:53:30 15 this same material about talking about how asbestos
 13:53:33 16 gets in our lungs and cause disease something that
 13:53:37 17 you've lectured about that has nothing to do with
 13:53:40 18 litigation?
 13:53:40 19 A. Absolutely. That's all listed in my CV.
 13:53:44 20 Q. I see you've been a participant or given
 13:53:47 21 presentations in Chicago, is that right?
 13:53:48 22 A. Yes, many times.
 13:53:49 23 Q. Salt Lake City?
 13:53:50 24 A. Yes.

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13:53:51 1 Q. Little Rock?
 13:53:52 2 A. Right.
 13:53:52 3 Q. Washington D.C.?
 13:53:53 4 A. Yes.
 13:53:53 5 Q. Detroit?
 13:53:53 6 A. Right.
 13:53:54 7 Q. St. Louis?
 13:53:54 8 A. Yes.
 13:53:55 9 Q. Chicago?
 13:53:56 10 A. Right.
 13:53:57 11 Q. Vermont?
 13:53:58 12 A. Right.
 13:53:58 13 Q. Montreal?
 13:53:59 14 A. Yes.
 13:54:00 15 Q. New Orleans?
 13:54:01 16 A. Right.
 13:54:01 17 Q. This goes on for 26 pages?
 13:54:03 18 A. It does, in fact. In fact, you missed a
 13:54:06 19 couple of interesting places like Paris and -- and
 13:54:10 20 cities in Italy and things like that.
 13:54:11 21 Q. That just makes me jealous, so I'm
 13:54:15 22 staying out of that.
 13:54:16 23 Are these presentations whether you're
 13:54:18 24 talking to a jury or a classroom of students or

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13:54:21 1 being asked to give a lecture at a conference any
 13:54:24 2 different because -- in terms of substance?
 13:54:28 3 A. Well, what's different is -- well, I
 13:54:31 4 could just answer no, they're not different, but
 13:54:35 5 what's different is the level that I'm talking
 13:54:37 6 about.
 13:54:37 7 In other words, you've asked me to
 13:54:39 8 explain how asbestos causes lung disease, and I'm
 13:54:42 9 going to do that. What I'm not going to do for
 13:54:44 10 this jury that I did the last time I talked to the
 13:54:47 11 Harvard School of Public Health is go into the
 13:54:49 12 individual genes that we believe are playing a role
 13:54:53 13 in this disease and I'm not going to explain how
 13:54:56 14 those genetics shape us and our lives and these
 13:55:00 15 diseases.
 13:55:01 16 There's a certain level that I think we
 13:55:04 17 need to deal with in the courtroom versus what I
 13:55:06 18 talk to when I go to the universities. There are
 13:55:08 19 different audiences and require different levels of
 13:55:11 20 understanding.
 13:55:11 21 Q. Another thing I see here in the resume
 13:55:13 22 is a section about editorial boards.
 13:55:15 23 Can you tell the jury what an editorial
 13:55:17 24 board is?

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13:55:18 1 A. Right. So if I want to publish one of
 13:55:23 2 my papers -- we haven't talked about publications,
 13:55:26 3 I know, I'm sure you're headed there, but obviously
 13:55:29 4 one of the things that I have to do is publish my
 13:55:32 5 work in the open medical literature. That's the
 13:55:35 6 only way I can compete for these research dollars
 13:55:39 7 from the NIH.
 13:55:40 8 So when I think I've done a series of
 13:55:42 9 experiments that is ready for anybody to read
 13:55:44 10 about, I write up a paper, a scientific paper, and
 13:55:48 11 I send it to a journal, a medical journal, and the
 13:55:51 12 editor of that journal takes my paper and sends it
 13:55:55 13 to my peers, scientists like myself, and those
 13:56:00 14 scientists review my work anonymously, and then
 13:56:04 15 they send a report back to the editor, and the
 13:56:07 16 editor then passes the reviews to the editorial
 13:56:11 17 board and the board makes decisions on what is
 13:56:15 18 published, so what goes out into the open medical
 13:56:18 19 literature.
 13:56:18 20 So editorial boards play a role in what
 13:56:21 21 gets published and what does not.
 13:56:23 22 Q. Does this process of having peer review
 13:56:26 23 of other scientists help validate work?
 13:56:29 24 A. Well, sure it does. In other words,

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13:56:31 1 scientists can pass judgment on what I'm doing.
 13:56:34 2 They can say whether or not what I'm doing is worth
 13:56:37 3 being read by others and worth being put out into
 13:56:40 4 the medical literature.
 13:56:41 5 Q. Can you give the jury an idea of how
 13:56:44 6 many peer-reviewed published articles in scientific
 13:56:47 7 literature you've had published?
 13:56:48 8 A. Yes. I have 149 peer-reviewed papers
 13:56:51 9 and about 51 now book chapters. Those are invited
 13:56:57 10 writings, book chapters and proceedings and things
 13:57:00 11 like that.
 13:56:58 12 Q. In addition to being peer-reviewed and
 13:57:01 13 being published, have you ever been on those
 13:57:04 14 editorial boards to review other people's work to
 13:57:07 15 see if they are scientifically signed?
 13:57:10 16 A. I do that regularly. I have two papers
 13:57:12 17 assigned to me right now, as we speak.
 13:57:15 18 Q. What I would like to do is move on then
 13:57:19 19 to the first topic outside of your qualifications.
 13:57:23 20 And that is, What is asbestos? Could you tell the
 13:57:25 21 jury what asbestos is?
 13:57:25 22 A. Sure. So asbestos is a naturally
 13:57:29 23 occurring mineral, and I'll just give you the brief
 13:57:33 24 introduction to asbestos. It is mined from the

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13:57:38 1 soil, and it's typically mined in open pit kind of
 13:57:43 2 mines and it comes out like a rock. It comes out
 13:57:46 3 like big rocks.
 13:57:47 4 And then asbestos is a fiber form
 13:57:50 5 mineral, so when it's crushed down to its final
 13:57:53 6 form, it can then be used in the myriad of products
 13:57:56 7 that it has been used in over the decades.
 13:57:59 8 There really are three major kinds of
 13:58:02 9 asbestos that make up almost 100 percent of all of
 13:58:06 10 the asbestos that has been used in the world.
 13:58:08 11 Q. And, Dr. Brody, I put in a slide, and
 13:58:12 12 let me know if these are the three that you are
 13:58:15 13 talking about because I wanted to be able to have
 13:58:17 14 pictures.
 13:58:17 15 A. Okay.
 13:58:18 16 Q. I thought that might be helpful.
 13:58:20 17 A. That's fine.
 13:58:20 18 Q. I was on the right track?
 13:58:21 19 A. Yes. That is just what I was going to
 13:58:23 20 say. I didn't know you had a picture.
 13:58:25 21 Q. I did. Could you go ahead and explain
 13:58:27 22 to the jury the difference between those different
 13:58:29 23 forms of asbestos?
 13:58:31 24 A. Sure. So here are the three forms, you

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13:58:33 1 can see, chrysotile is about 95 of the world's use.
 13:58:39 2 The other two varieties are in a different mineral
 13:58:43 3 group, and they are crocidolite and amosite.
 13:58:45 4 And so here is the rock form, and
 13:58:48 5 chrysotile is commonly called white asbestos
 13:58:51 6 because when it comes out of the rock, it has a
 13:58:53 7 white cast to it. Crocidolite is commonly called
 13:58:59 8 blue asbestos, even though it is kind of an ugly
 13:59:01 9 color here, it has a blue mineral content. Amosite
 13:59:06 10 is called brown asbestos because the rock is brown.
 13:59:09 11 And you can see it's fiber form, and
 13:59:11 12 when it's crushed down, you can see these are the
 13:59:14 13 kinds of appearances that the fibers would have
 13:59:16 14 before they are incorporated into the various
 13:59:19 15 products.
 13:59:20 16 Now, this mineral, chrysotile, that is
 13:59:24 17 about 95 percent of the world's use, is in a
 13:59:27 18 mineral group called serpentine. It's called
 13:59:33 19 serpentine because when you look at the rock --
 13:59:35 20 actually not as you see it here, but when these
 13:59:37 21 rocks sit in the face of the mines, it kind of
 13:59:41 22 winds through the rock in a kind of sinuous,
 13:59:44 23 snakelike pattern, serpentine. So this is a
 13:59:48 24 serpentine mineral. Chrysotile is the only member

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13:59:51 1 of that mineral that is an asbestos variety.
 13:59:55 2 And then crocidolite and amosite fall
 13:59:58 3 into another mineral category called amphibole,
 14:00:01 4 a-m-p-h-i-b-o-l-e.
 14:00:04 5 The amphiboles -- there are actually
 14:00:07 6 several, four or five different amphiboles that
 14:00:08 7 have been used and that are asbestos minerals, but
 14:00:11 8 only crocidolite and amosite really have been used
 14:00:17 9 enough to count in the sense of percent use. So
 14:00:21 10 amosite and crocidolite make up just about the
 14:00:24 11 other 5 percent of all of the world's use of
 14:00:27 12 asbestos.
 14:00:27 13 Q. Have you had an opportunity to review
 14:00:30 14 literature about these different types of asbestos
 14:00:30 15 and their ability to cause disease?
 14:00:34 16 A. Sure.
 14:00:34 17 Q. I want to talk to you a little bit then
 14:00:36 18 about the diseases that asbestos causes.
 14:00:40 19 First, starting with asbestosis, could
 14:00:44 20 you explain that to the jury?
 14:00:46 21 A. So asbestosis, by definition, is scar
 14:00:51 22 tissue in the lung from inhaling asbestos, and it
 14:00:54 23 typically takes long-term, high-level exposures.
 14:01:00 24 When I say long-term, I mean many years of high

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14:01:03 1 concentrations of exposure to develop the clinical
 14:01:07 2 picture of asbestos, which is scarring in the lung,
 14:01:11 3 and you can actually see that scarring even with
 14:01:13 4 the naked eye in this person.
 14:01:15 5 Q. The next disease I want to talk to you
 14:01:18 6 about are pleural plaques?
 14:01:20 7 A. If you'll back up just a second.
 14:01:26 8 So pleural plaques, it's another scar
 14:01:29 9 tissue, but it sits just on the surface of the lung
 14:01:32 10 inside the rib cage. You see the artist has
 14:01:36 11 removed the ribs here. And this is a Netter
 14:01:36 12 diagram here. I use Netter diagrams.
 14:01:40 13 Dr. Netter has given us atlases of the
 14:01:44 14 human body in health and disease, and lecturers
 14:01:48 15 commonly use Netter diagrams. This is the Netter
 14:01:49 16 diagram of asbestosis. There is his signature
 14:01:54 17 right there.
 14:01:55 18 And what he's showing you here, on the
 14:01:57 19 surface of the lung is scar tissue, and these
 14:02:00 20 individual scars then are plaques that sit on the
 14:02:04 21 surface of the lung. And that's a close-up of
 14:02:06 22 those, so this is scar tissue that appears on the
 14:02:09 23 surface of the lung.
 14:02:12 24 Q. The next disease in terms of asbestos

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14:02:15 1 exposure that I want to talk about is lung cancer.
 14:02:18 2 Could you explain that for the jury?
 14:02:20 3 A. So lung cancer develops in the walls of
 14:02:22 4 the airways, and I'll separate out the airways
 14:02:26 5 versus the gas exchange area of the lung. I have a
 14:02:28 6 diagram that does that in just a minute.
 14:02:30 7 But you can see here is a cancer that
 14:02:34 8 has developed, and the cancer is confined right now
 14:02:36 9 to the central regions of the lung. The pleura is
 14:02:40 10 normal. You can see the pleura out here, very
 14:02:43 11 thin, shiny membrane. The pleura is a Saran Wrap
 14:02:48 12 thin membrane that wraps around the outside of the
 14:02:51 13 lung, makes the lungs air tight. This is a normal
 14:02:55 14 pleura.
 14:02:55 15 This is a cancer that has arisen in the
 14:02:58 16 walls of the airways, and typically lung cancer
 14:03:02 17 develops in the lungs of people that smoke
 14:03:04 18 cigarettes. If one is exposed to asbestos and
 14:03:09 19 smokes cigarettes, you have a much greater risk of
 14:03:13 20 getting lung cancer. Much greater than the risk of
 14:03:14 21 adding asbestos alone, the risk of smoking alone.
 14:03:17 22 They synergize. They are multiplicative risk.
 14:03:22 23 But this is what the lung cancer would
 14:03:24 24 look like, whether it was just from cigarette smoke

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14:03:27 1 or from both cigarette smoke and asbestos.
 14:03:30 2 Q. Probably, most importantly, I want to
 14:03:33 3 talk to you about the disease that Mr. Mulcahy died
 14:03:36 4 from. Could you explain what this shows in regards
 14:03:39 5 to mesothelioma?
 14:03:40 6 A. So you remember what that very thin
 14:03:43 7 pleura looked like. Now we have a dramatically
 14:03:47 8 thickened pleura, and it's thickened because cancer
 14:03:47 9 cells have developed on the surface of that pleura,
 14:03:50 10 and are spreading into the lung and they have
 14:03:52 11 spread down into the peritoneal cavity that holds
 14:03:56 12 the stomach and the intestines.
 14:03:58 13 And I'll explain how asbestos gets out
 14:04:00 14 to the pleura and causes this cancer.
 14:04:03 15 Q. You have mentioned the role of smoking
 14:04:07 16 and lung cancer. What is the role of smoking in
 14:04:10 17 terms of causing mesothelioma?
 14:04:11 18 A. There is none. I did not mention it
 14:04:13 19 because there is no association between cigarette
 14:04:16 20 smoking and mesothelioma.
 14:04:17 21 Q. Throughout your studies, have you found
 14:04:19 22 that there is a safe level of exposure to asbestos,
 14:04:22 23 when we are specifically talking about its ability
 14:04:25 24 to cause mesothelioma, as opposed to asbestos and

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14:04:31 1 other diseases?
 14:04:32 2 MR. KING: Objection, your Honor.
 14:04:33 3 THE COURT: Overruled.
 14:04:34 4 BY THE WITNESS:
 14:04:34 5 A. There is no safe level that has been
 14:04:37 6 established for mesothelioma. If all one is
 14:04:39 7 exposed to is what is in the background, that
 14:04:41 8 little bit of asbestos that we all have in our
 14:04:44 9 lungs, I don't expect that to cause disease. I
 14:04:47 10 have never heard of anybody developing asbestos
 14:04:51 11 disease from the background, so you could say,
 14:04:54 12 Well, maybe that is safe.
 14:04:56 13 But above that, no one has established a
 14:04:59 14 level that is safe for everybody.
 14:05:02 15 BY MS. DEAN:
 14:05:02 16 Q. Again, there was a comparison made by a
 14:05:04 17 couple of lawyers about Tylenol and how you can
 14:05:09 18 take one Tylenol and it can be good for you, but a
 14:05:13 19 bottle might be bad for you. Do you think that
 14:05:15 20 that is a helpful comparison in understanding
 14:05:18 21 asbestos exposure and its ability to cause
 14:05:21 22 mesothelioma?
 14:05:21 23 A. Well, yes and no is the answer. In
 14:05:23 24 other words, what that analogy does, whether it is

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14:05:26 1 Tylenol or aspirin or water or anything else, it
 14:05:30 2 makes the point about dose/response, and that is
 14:05:33 3 fine.
 14:05:34 4 The more you have, the more likely it is
 14:05:38 5 to cause disease, but those are not useful
 14:05:41 6 analogies because those materials, Tylenol or
 14:05:48 7 aspirin or water, those are metabolized. And if
 14:05:53 8 you take them in a normal amount, they get used up
 14:05:55 9 and you can go ahead and take the prescribed dose
 14:05:58 10 every day and you are fine.
 14:06:00 11 Asbestos does not go away. Some
 14:06:02 12 percentages of it go away every day, but not all of
 14:06:05 13 it, and that is why it accumulates. And these are
 14:06:10 14 cumulative diseases because the asbestos
 14:06:12 15 accumulates in the lung.
 14:06:14 16 Q. I think we may have already talked about
 14:06:16 17 this, but what is this slide show?
 14:06:19 18 A. This would be -- this is an actual
 14:06:21 19 picture versus a diagram. So it's normal lungs.
 14:06:23 20 If you look at the lungs, you can see this is the
 14:06:27 21 left lung, which has two lobes, versus the right
 14:06:31 22 lung, which has three lobes, right upper, right
 14:06:32 23 middle, and right lower lobe. And this is normal,
 14:06:35 24 and the pleura you can see is that shiny Saran

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14:06:35 1 Wrap.
 14:06:40 2 And in this lung it has been replaced by
 14:06:44 3 this dramatic growth of cancer cells over and
 14:06:47 4 around the lung.
 14:06:48 5 Q. Dr. Brody, could you explain to the jury
 14:06:49 6 the concept of individual susceptibility, when we
 14:06:51 7 are talking about cancer risk?
 14:06:53 8 A. Sure. You know -- you all know people
 14:06:56 9 that have smoked all their lives and then passed
 14:06:58 10 away of something other than lung cancer, and that
 14:07:01 11 is the same thing with asbestos.
 14:07:03 12 Most people exposed to asbestos do not
 14:07:06 13 get disease, and those that do are susceptible.
 14:07:11 14 And what makes these people susceptible, whether we
 14:07:14 15 are talking about cigarette smoke or asbestos, is
 14:07:17 16 their genetic makeup. What is it about their genes
 14:07:22 17 that makes them susceptible to disease? And I
 14:07:25 18 can't answer that question. There are a few
 14:07:28 19 diseases that we can define the genes, where we
 14:07:33 20 know the specific gene and an error in that gene
 14:07:36 21 will make that person susceptible. We could list
 14:07:39 22 them if we had time or if we wanted to talk about
 14:07:42 23 that.
 14:07:42 24 We don't know those genes yet for

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14:07:45 1 mesothelioma and lung cancer, but we have a list
 14:07:48 2 that we are working on now. We know there are
 14:07:51 3 certain genes that we expect to be damaged in a
 14:07:54 4 person with mesothelioma. Now, just which
 14:07:57 5 combination of those, just which ones are required
 14:07:59 6 for that person is what we are learning today.
 14:08:08 7 Q. I would like to ask your opinion -- if
 14:08:10 8 you can't figure out which particular people are
 14:08:14 9 susceptible to disease, do you know whether it was
 14:08:16 10 something that was understood in a large enough
 14:08:18 11 population that was exposed that at least some
 14:08:20 12 people, even if we don't know which ones, would get
 14:08:24 13 sick?
 14:08:24 14 A. Well, that's what epidemiology tells us.
 14:08:27 15 In other words, if there was an exposed population,
 14:08:29 16 you have a certain percent expectation of who will
 14:08:32 17 get the disease in that population, true.
 14:08:35 18 Q. Now, the next concept I'd like to have
 14:08:37 19 you explain is latency.
 14:08:39 20 A. Uh-huh, okay. Latency is the time from
 14:08:43 21 first exposure until the time it takes for the
 14:08:48 22 person to come to the clinic. The latency is that
 14:08:51 23 time period in between first exposure and the time
 14:08:55 24 the person comes to the clinic, and typically for

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14:08:58 1 all of the asbestos diseases, it's many decades.
 14:09:02 2 It's -- it can be anywhere from 10 to 70 years, but
 14:09:07 3 it's more typically 30 to 50 years.
 14:09:11 4 Q. Based on your study -- and I want to go
 14:09:14 5 through each one of these -- for each one of the
 14:09:16 6 forms of asbestos that you identified, the
 14:09:19 7 chrysotile, amosite and crocidolite, do you have an
 14:09:24 8 opinion on whether exposure to all three of those
 14:09:26 9 types can cause asbestosis?
 14:09:27 10 A. They do, certainly.
 14:09:28 11 Q. What about pleural plaques?
 14:09:30 12 A. Yes, they do.
 14:09:31 13 Q. What about lung cancer?
 14:09:33 14 A. All of the varieties contribute to lung
 14:09:34 15 cancer, yes.
 14:09:35 16 Q. And what about mesothelioma?
 14:09:36 17 A. Yes, all of the asbestos varieties cause
 14:09:39 18 mesothelioma.
 14:09:39 19 Q. Is there any potency difference between
 14:09:41 20 the different fibers?
 14:09:43 21 A. For mesothelioma, yes. There's no
 14:09:46 22 established difference in potency for asbestosis
 14:09:48 23 and lung cancer, but for mesothelioma, it looks
 14:09:52 24 like the amphiboles are more potent. That means on

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14:09:55 1 a fiber-per-fiber basis.

14:09:57 2 So they all cause the disease, they all

14:09:59 3 cause genetic damage, they all cause the diseases,

14:10:02 4 but it looks like it -- on a fiber-by-fiber basis,

14:10:07 5 the amphiboles, the crocidolite and amosite, are

14:10:10 6 more potent, so it's important to know what the

14:10:12 7 person's exposed to.

14:10:14 8 If all he or she is exposed to

14:10:16 9 chrysotile, that's what caused it. If all they're

14:10:18 10 exposed to are amphiboles, that's what caused it.

14:10:20 11 If they're exposed to both, that's what caused it.

14:10:23 12 Q. Did you ever have an opportunity to talk

14:10:27 13 to or treat or meet John Mulcahy?

14:10:30 14 A. No, of course not. We -- we established

14:10:34 15 I'm not a medical doctor. I did meet the family

14:10:36 16 today.

14:10:36 17 Q. Okay. And are your opinions about how

14:10:40 18 asbestos causes disease related to any of the

14:10:42 19 specifics in this particular case?

14:10:44 20 A. Well, only in the sense that if you

14:10:46 21 learn that the gentleman was exposed to asbestos

14:10:50 22 and that he in fact got a mesothelioma, I'm going

14:10:55 23 to try to explain what happened, but, you know, I

14:10:57 24 didn't look at the tissues. I don't know the

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14:11:00 1 individual, so I'm not talking specifically

14:11:02 2 about -- I'm not talking specifically about that

14:11:04 3 person, but I'm talking about that process that

14:11:07 4 went on in that person's lung.

14:11:08 5 Q. What I'd like to do move next -- you

14:11:11 6 gave me a slide show, and I'd like to go through

14:11:13 7 that.

14:11:13 8 MS. DEAN: With the Court's permission, can

14:11:19 9 Professor Brody step down to point to the slides?

14:11:21 10 THE COURT: Sure. Watch your step.

14:11:23 11 THE WITNESS: Thank you.

14:11:33 12 BY MS. DEAN:

14:11:34 13 Q. First, am I starting --

14:11:38 14 THE WITNESS: Am I all right?

14:11:41 15 THE COURT: Let me know if you can't hear.

14:11:43 16 If you could be consciousness that the

14:11:45 17 court reporters have to hear you.

14:11:46 18 THE WITNESS: Yes. Let me know if you can't

14:11:48 19 hear me.

14:11:48 20 BY MS. DEAN:

14:11:49 21 Q. Professor Brody, what's the significance

14:11:53 22 of this first slide?

14:11:54 23 A. So obviously this is a diagram, and

14:11:57 24 we've talked a little bit about that.

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14:11:58 1 When you take a breath, the air comes

14:12:00 2 down into this tube here that we call the trachea

14:12:03 3 or windpipe, and you could feel the top of that in

14:12:05 4 your Adam's apple, that's your windpipe, and you

14:12:08 5 take a breath, and the air goes through a series of

14:12:11 6 tubes that we call conducting areas because they

14:12:13 7 conduct the air down into the lungs.

14:12:16 8 So as you sit here and you take a breath

14:12:19 9 pulling the air in, the air goes into the tubes,

14:12:21 10 and then in among the tubes is the gas exchange

14:12:24 11 area of the lung where we exchange oxygen and

14:12:26 12 carbon dioxide, and I'll go through that in a

14:12:29 13 little bit more.

14:12:31 14 On the outside of the lung, this black

14:12:33 15 line represents the pleura, and we've already seen

14:12:37 16 that thin Saran Wrap pleura that makes the lungs

14:12:40 17 airtight.

14:12:43 18 Are you going to run -- can I use that?

14:12:46 19 Q. Sure.

14:12:49 20 A. Thank you.

14:12:51 21 So -- go ahead.

14:12:53 22 Q. Sorry to interrupt you. What's

14:12:55 23 significant about this slide?

14:12:56 24 A. Well, what I wanted to say is that I use

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14:12:58 1 diagrams a lot, but it helps to be able to see what

14:13:01 2 these things actually look like, so in order to do

14:13:03 3 that, we use different kinds of microscopes, and

14:13:06 4 this is called an electron microscope, and this

14:13:10 5 microscope was a victim of Hurricane Katrina, but I

14:13:15 6 used it for many years.

14:13:16 7 And I can take a piece of tissue as

14:13:18 8 small as a period at the end of the sentence or as

14:13:21 9 big as this device I'm holding in my hand and put

14:13:24 10 that tissue into this door right here, and inside

14:13:29 11 this column is a vacuum, so when I put the tissue

14:13:32 12 in the door and I start the microscope, the

14:13:36 13 electrons come down from the top of the chamber,

14:13:39 14 strike that sample and make an electron image.

14:13:43 15 The electrons pass over the surface of

14:13:45 16 that sample and produce an electron image

14:13:49 17 recreating the surface of that sample, whatever I

14:13:52 18 put in.

14:13:53 19 In front of me then appears that

14:13:56 20 recreation of that tissue, and then I can magnify

14:13:59 21 it anywhere from five times to hundreds of

14:14:01 22 thousands of times, and then there's a camera just

14:14:05 23 off the screen so I can take a permanent image of

14:14:08 24 whatever it is we're looking at.

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14:14:10 1 So, for example, I cut a piece of tissue
 14:14:12 2 out of the lung, and you see the conducting air was
 14:14:15 3 here and you see the pleura running around the top,
 14:14:18 4 and I cut this out and I take a picture of it, it
 14:14:24 5 looks like this.
 14:14:24 6 So here are these conducting areas that
 14:14:27 7 that we have the diagram, then we have that very
 14:14:29 8 thin pleura, you can see the sheet that runs along
 14:14:32 9 the top of the lung, and now this is the gas
 14:14:34 10 exchange area of the lung.
 14:14:36 11 So you take a breath, the air comes down
 14:14:37 12 and fills all the little spaces, and this is where
 14:14:41 13 we exchange oxygen and carbon dioxide.
 14:14:43 14 Q. Have you been able to get an even closer
 14:14:46 15 look of that same image?
 14:14:46 16 A. Yes. When we take a closer look, what
 14:14:50 17 we're going to do is go onto the surface of the
 14:14:52 18 area, and I want to show you a couple of our
 14:14:57 19 defense mechanisms that we all have that protect us
 14:15:00 20 against the dust we see, bacteria, pollen and all
 14:15:03 21 the things that we face every day when we walk
 14:15:05 22 around the streets.
 14:15:06 23 So I'm going to focus the microscope
 14:15:08 24 down in the airway. It could be any airway around

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14:15:14 1 the lung, and I'm going to fill the screen with
 14:15:16 2 what's in that red spot. So I'm going to focus the
 14:15:18 3 microscope here, I'm going to take a -- I'm going
 14:15:21 4 to fill the screen with what's in the red spot.
 14:15:23 5 I'm going to take a picture.
 14:15:25 6 Q. What do you see once you get that closer
 14:15:27 7 picture?
 14:15:28 8 A. So this is what the surface of our
 14:15:30 9 airways looks like, and you can see this says,
 14:15:33 10 "human bronchiole" -- bronchiole is a small area --
 14:15:37 11 and our airways are lined by these hair-like
 14:15:41 12 structures. They're not really hairs at all,
 14:15:42 13 they're sections of the cell surface that are
 14:15:46 14 constantly moving in a synchronous wave-like
 14:15:49 15 fashion, so if something lands on the surface of
 14:15:51 16 the airway, it gets swept up to our mouth where we
 14:15:55 17 can swallow it or cough it out.
 14:15:58 18 Now here's a cell that has cilia on it,
 14:16:00 19 here's a cell that doesn't have cilia on it. Some
 14:16:00 20 of the cells that don't have cilia on them make
 14:16:03 21 mucous.
 14:16:05 22 So we have this combination of mucous
 14:16:07 23 and cilia, and we call it the mucociliary escalator
 14:16:12 24 because it escalates things up to our mouth.

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14:16:15 1 Q. Is that one of our body's defense
 14:16:17 2 mechanisms?
 14:16:17 3 A. Absolutely, and I'm just getting over a
 14:16:20 4 viral cold and I had some of my airway cells
 14:16:23 5 damaged by a virus and -- excuse me, but I'm making
 14:16:26 6 mucous and the cilia are carrying that mucous up to
 14:16:30 7 my mouth, and that means that my mucociliary
 14:16:34 8 escalator is working just fine.
 14:16:35 9 Q. What is that measurement there at the
 14:16:38 10 bottom for?
 14:16:39 11 A. Okay. This says 10 with a little micron
 14:16:43 12 bar -- with a little micron. This is a bar, it's
 14:16:46 13 called a size marker, so the electron microscope
 14:16:49 14 prints onto the pictures the size of these things.
 14:16:53 15 If we wanted to know how long these
 14:16:55 16 cilia are, for example, we can go to the size
 14:16:57 17 marker, and this says, "10 microns." Well, it's
 14:17:03 18 easy to see 10 microns, but this is magnified many
 14:17:06 19 thousands of times.
 14:17:07 20 The question is how big is a micron,
 14:17:08 21 right?
 14:17:09 22 Q. Yeah. Could you give us an idea?
 14:17:11 23 A. I can. So if you take your thumb and
 14:17:13 24 your forefinger and you make just a little space,

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14:17:15 1 you can just barely see through with your naked
 14:17:19 2 eye, you've made a one-millimeter space. Now take
 14:17:22 3 that millimeter and divide it 1,000 times. You've
 14:17:25 4 made 1,000 microns.
 14:17:29 5 So one millimeter equals 1,000 microns,
 14:17:34 6 and you can just barely see that with your naked
 14:17:37 7 eye. You obviously can't see 10 microns, you can
 14:17:39 8 barely see a thousand, but with the electron
 14:17:42 9 microscope, it's easy to see 10 microns, and in
 14:17:45 10 your mind's eye, you can stand this bar next to a
 14:17:50 11 cilia and you can see they're about 8 to 10 microns
 14:17:53 12 long.
 14:17:53 13 Q. Is there anything else about this
 14:17:56 14 particular --
 14:17:57 15 A. No. We've seen that defense mechanism,
 14:17:59 16 and that's what covers these areas.
 14:18:02 17 So now we're going to go past this
 14:18:04 18 defense mechanism out into the gas exchange area
 14:18:07 19 and look at this for just a minute, because
 14:18:09 20 remember, the target cells for mesothelioma are out
 14:18:12 21 here on the surface of the pleura, and I want you
 14:18:15 22 to understand how the fibers get out to the target
 14:18:20 23 site, and the way they do that is landing out here
 14:18:23 24 in the gas exchange, so we'll see that and then

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14:18:25 1 we'll see the pathways that the fibers take to get
 14:18:28 2 to the target cells.
 14:18:29 3 Q. Have you been able to get a picture of
 14:18:31 4 the gas exchange to show the jury?
 14:18:32 5 A. Exactly. So we're going here at the end
 14:18:35 6 of the airway, and here we are. There's the end of
 14:18:38 7 the airway where it opens into the gas exchange,
 14:18:41 8 and you can see these little air spaces.
 14:18:44 9 I like to think of these as little rooms
 14:18:46 10 kind of like the room that we're standing in right
 14:18:49 11 here or sitting in and surrounded by walls. There
 14:18:53 12 are no ceilings to these rooms, so you take a
 14:18:56 13 breath, the air comes rushing down the airway, it
 14:19:00 14 fills the little rooms.
 14:19:02 15 Now, notice if you took a saw and you
 14:19:04 16 cut through the floor or the walls, you'd see where
 14:19:06 17 all the electricity and the plumbing and everything
 14:19:09 18 is running through the walls and the floor of this
 14:19:11 19 room. The same thing in the lung.
 14:19:14 20 When I was preparing this lung, I cut
 14:19:16 21 through some of the walls and I opened up these
 14:19:19 22 little holes in the walls, and this is where the
 14:19:21 23 blood runs.
 14:19:23 24 All the blood in our bodies has to run

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14:19:25 1 through the walls of our air spaces, so when the
 14:19:28 2 room air comes into the room, it's about 20 percent
 14:19:32 3 oxygen, the oxygen in the room dissolves into the
 14:19:38 4 blood that's running through the walls, it gets
 14:19:40 5 picked up, carried to our brain and our fingertips.
 14:19:44 6 In the meantime, the blood cells that
 14:19:45 7 have picked up the carbon dioxide that we made come
 14:19:49 8 back to you lungs, give up the carbon dioxide and
 14:19:53 9 you exhale, and as long as everything is going
 14:19:56 10 fine, you don't think much about it. In fact, if a
 14:19:57 11 rat or mouse was running down here right now, it
 14:20:00 12 would be doing exactly what you and I are doing,
 14:20:03 13 inhaling and exhaling the room air using exactly
 14:20:06 14 these same structures.
 14:20:08 15 A mouse lung is about the size of the
 14:20:09 16 tip of my little finger, but its cells and its air
 14:20:14 17 spaces are almost exactly the same size as ours,
 14:20:17 18 many fewer of them, of course, but they're doing
 14:20:19 19 exactly what our cells do, and since they get the
 14:20:24 20 same diseases, that's one of the reasons we use
 14:20:27 21 them in our modeling system.
 14:20:29 22 Q. Have you been able to get a closer-up
 14:20:32 23 picture of one of the air spaces in this gas
 14:20:37 24 exchange area?

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14:20:37 1 A. Yes. We'll go into a single human air
 14:20:40 2 space, so we have no ceiling and you will be
 14:20:42 3 hanging over the air space and you'll be looking
 14:20:44 4 down at the carpet, and the carpet -- so here's a
 14:20:47 5 gray carpet made up of carpet squares, so what
 14:20:51 6 we're going to do is we're going to look at the
 14:20:52 7 carpet that lines all of our air spaces, and it's a
 14:20:55 8 similar kind of thing.
 14:20:57 9 The cell -- I will give you the full
 14:21:00 10 name of the cell. It's an epithelial cell. It
 14:21:03 11 covers the surface, so we're going to look down at
 14:21:06 12 these epithelial cells, and it's a complete
 14:21:10 13 covering, not only just the floor, but the carpet
 14:21:12 14 goes up the wall and into the next room and the
 14:21:14 15 next room, so we have this complete carpet of cells
 14:21:16 16 that covers all our air spaces.
 14:21:18 17 So we're going to poise over one of
 14:21:20 18 these air spaces, it could be any one of these, and
 14:21:24 19 there we are. Now we're looking at a single human
 14:21:27 20 air space.
 14:21:27 21 Q. What are we seeing there?
 14:21:29 22 A. Okay. Well, I'm outlining one of the
 14:21:31 23 carpet squares for you, but nature doesn't make
 14:21:34 24 squares very well; nature makes smooth surfaces.

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14:21:38 1 So this is more like a carpet oval, and
 14:21:40 2 it's next to another oddly shaped cell over here
 14:21:43 3 and another oddly shaped cell, so we have this
 14:21:46 4 patchwork of hundreds of millions of cells that
 14:21:48 5 make up the carpet that covers our air space, and
 14:21:53 6 when somebody inhales asbestos fibers, you'll see
 14:21:56 7 those fibers go shooting right down and land on the
 14:21:58 8 carpet, and I'll tell you what happens after that.
 14:22:03 9 But there's another kind of epithelial
 14:22:06 10 cell here. These cells are smaller, they have
 14:22:08 11 little bumps all over them. If the big flat carpet
 14:22:11 12 cells get injured by infection or asbestos, we have
 14:22:15 13 these smaller cells that start to divide and take
 14:22:18 14 the place and spread out, cover the wound. It's an
 14:22:24 15 essential repair mechanism that we all have in our
 14:22:26 16 air spaces.
 14:22:27 17 Q. What are those called?
 14:22:28 18 A. Well, fortunately, the big flat cells
 14:22:31 19 are called type 1 epithelial cells and the other
 14:22:35 20 smaller cells are type 2 epithelial cells.
 14:22:40 21 Okay. So I'm going to -- there's one
 14:22:42 22 more slide I have to show you. We have a final
 14:22:45 23 defense -- line of defense in the lung.
 14:22:48 24 Q. And what's that?

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14:22:48 1 A. In order to show you that, I'm going to
 14:22:51 2 focus down on the carpet here, and you remember the
 14:22:54 3 cell with the bumps all over it? I'm going to take
 14:22:56 4 this picture, and there's the cell now with the
 14:22:59 5 bumps all over it, so you can see I focused down on
 14:23:02 6 the carpet.
 14:23:03 7 Here's the carpet down here. There's
 14:23:05 8 the cell with the bumps, and now there are two
 14:23:07 9 other cells. There's this one that's kind of
 14:23:09 10 ruffled and not going anywhere and then there's
 14:23:11 11 this cell with a tail end and two what are call
 14:23:16 12 false feet. If you've ever had a biology class,
 14:23:20 13 you remember pseudopods, false feet.
 14:23:22 14 So I know the cell is going in this
 14:23:24 15 direction when I caught it moving, and it was going
 14:23:26 16 after this pollen grain when I caught it.
 14:23:31 17 So this lung once belonged to somebody
 14:23:34 18 who was killed in a motorcycle accident, and I was
 14:23:36 19 on the medical examiner's autopsy call, so I went
 14:23:38 20 in and prepared that person's lung, and I went from
 14:23:40 21 air space to air space with my electron microscope
 14:23:44 22 looking for interesting things, and one of the
 14:23:45 23 things I found were these two cells, this one and
 14:23:48 24 this one, and they're called macrophages -- "macro"

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14:23:51 1 means big and "phag" means eater -- and they patrol
 14:23:55 2 our air space surfaces.
 14:23:57 3 Each one of us has about -- if we don't
 14:24:00 4 smoke has about one or two macrophages in every
 14:24:04 5 space, and they can detect the presence of foreign
 14:24:07 6 particles like this pollen grain this person
 14:24:10 7 obviously inhaled when he was riding along on his
 14:24:13 8 motorcycle.
 14:24:14 9 In my laboratory, we discovered the
 14:24:16 10 signal that attracts macrophages to asbestos
 14:24:20 11 fibers. There are chemical signals that these
 14:24:24 12 macrophages can detect, and they migrate and move,
 14:24:28 13 pick up the particle and then get onto the
 14:24:31 14 mucociliary escalator. Every time you swallow,
 14:24:35 15 we're swallowing a few of our friends, these
 14:24:38 16 macrophages. That's normal. That's what's
 14:24:42 17 supposed to happen.
 14:24:42 18 Q. Do they protect us against asbestos
 14:24:45 19 fibers?
 14:24:45 20 A. Absolutely. They are constantly trying
 14:24:48 21 to move asbestos fibers from the lung. We have
 14:24:49 22 recovered macrophages from the lungs of people
 14:24:51 23 decades -- with asbestos in them decades after they
 14:24:55 24 have finished their exposure to asbestos.

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14:24:58 1 Q. You've gone through the different
 14:25:01 2 defense mechanisms in our lungs.
 14:25:02 3 Can you now tell us a little bit about
 14:25:03 4 how asbestos can get through all of those and still
 14:25:06 5 get to our bodies?
 14:25:08 6 A. Absolutely. So let's talk about
 14:25:10 7 asbestos.
 14:25:11 8 Now, this is chrysotile asbestos. I
 14:25:13 9 told you the different types of asbestos. I've
 14:25:15 10 used mostly chrysotile in my work because that's 95
 14:25:19 11 percent of the world's use. I use chrysotile
 14:25:22 12 mostly, but I've done these same experiments that
 14:25:25 13 I've talking about here with crocidolite and
 14:25:28 14 amosite. So I talk about asbestos in general
 14:25:31 15 because asbestos does what all the asbestos
 14:25:34 16 varieties do.
 14:25:37 17 Now, this is a fiber bundle. You can
 14:25:39 18 see that all the fibers are bundled together, and
 14:25:42 19 let's look at the size marker. This is a 1-micron
 14:25:46 20 bar, and it's easy to see 1 micron at a
 14:25:50 21 magnification of 4,300 times.
 14:25:54 22 Now, if you want to know how big and
 14:25:56 23 small these fibers are, you take this little marker
 14:25:58 24 in your mind's eye and you stand it up along here.

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14:26:01 1 You can see you can probably get five or six of
 14:26:03 2 these bars down here, so this straight fiber here
 14:26:06 3 is about 5 or 6 microns long.
 14:26:02 4 Q. I want to pause there because you just
 14:26:09 5 said a straight fiber was a chrysotile fiber?
 14:26:12 6 A. Yeah.
 14:26:13 7 Q. So chrysotile can be straight?
 14:26:14 8 A. Sure. There are a lot of curly fibers
 14:26:18 9 and there are a lot of -- there are curly fibers
 14:26:20 10 and there are some straight fibers. There are more
 14:26:23 11 curly fibers than straight fibers, that's the
 14:26:27 12 nature of chrysotile. But the other nature of
 14:26:28 13 chrysotile is that the fibers are constantly
 14:26:30 14 breaking down. You can see fragments of
 14:26:33 15 chrysotile, as well.
 14:26:33 16 Now, all of these asbestos components,
 14:26:37 17 whether it's the long fibers, some of them hundreds
 14:26:39 18 of microns long or the fibers that are 9 or
 14:26:44 19 10 microns or the fragments that are 3 or
 14:26:44 20 4 microns long, even the ones that are
 14:26:47 21 extraordinarily thin, you see those that are less
 14:26:49 22 than 1 micron in diameter, they are all
 14:26:53 23 participating in the disease process. They all
 14:26:56 24 bind to DNA, genetic material. They all bind to

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14:27:00 1 the membranes. They all participate.
 14:27:03 2 Q. And have you been able to see that
 14:27:05 3 through your microscope, where the asbestos is
 14:27:09 4 actually binding to our DNA?
 14:27:11 5 A. Yes. What we are going to do in the
 14:27:13 6 next couple of slides is, I'm going to show you now
 14:27:16 7 from my animal models. Because you can't use human
 14:27:18 8 models to understand what is happening next.
 14:27:19 9 Q. Why not?
 14:27:19 10 A. Well, you don't get to be in the
 14:27:22 11 workplace and watch the dust land in the person's
 14:27:25 12 lung and then take a piece of lung. You don't get
 14:27:29 13 to do that. So the only way to find out where the
 14:27:32 14 fibers land first and then how they interact with
 14:27:34 15 the cells that I just showed you is to use the
 14:27:36 16 model system.
 14:27:37 17 Now, what I learned from Dr. Wager was
 14:27:40 18 that the best way to do that was to have these
 14:27:42 19 chambers. They are about 6 feet high, 4 feet wide,
 14:27:44 20 with an asbestos generator at the top of the
 14:27:48 21 chamber, and it makes a dusty environment in the
 14:27:51 22 chamber. You put the animals, usually rats or
 14:27:55 23 mice, into the chambers for as long as I prescribe
 14:27:58 24 the experiment. It could be an hour, it could be

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14:29:04 1 do they do, how do they get to the target sites and
 14:29:07 2 how do they cause disease, so I can show you that
 14:29:10 3 in the next couple of slides.
 14:29:12 4 Q. Please do.
 14:29:13 5 A. So you are familiar with this now. This
 14:29:16 6 is the end of the airway, as it opens out into the
 14:29:19 7 gas exchange. Here are a whole bunch of little
 14:29:22 8 rooms. Here you can see the holes in the walls
 14:29:25 9 where the blood flows. You have seen all of this
 14:29:28 10 now, but this is from a rat that has been exposed
 14:29:30 11 to chrysotile asbestos for a single hour.
 14:29:32 12 After the hour of exposure, I take the
 14:29:35 13 animals out of the chamber, and I give them an
 14:29:38 14 overdose of anesthetic. "Overdose," of course,
 14:29:41 15 means they do not wake up from that, and then I can
 14:29:45 16 go ahead and prepare the lungs, as I have shown you
 14:29:48 17 we can do, and then we can look at the various
 14:29:51 18 parts of the lung. So this is one of these areas
 14:29:53 19 of the lung, it's one of millions of areas like
 14:29:56 20 this around the lung. I'm showing you one of them.
 14:29:58 21 Of course, when I did my work and
 14:30:00 22 published it, I had to look at thousands of them to
 14:30:02 23 prove to my peers that I was actually -- what I was
 14:30:05 24 telling them was true.

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14:28:01 1 two hours, it could be days or weeks.
 14:28:03 2 Now, one thing that is important to note
 14:28:05 3 here is Dr. Wager and a number of other people have
 14:28:08 4 produced these final clinical diseases in the
 14:28:11 5 animals. They have produced asbestosis, lung
 14:28:15 6 cancers, mesotheliomas. A number of investigators
 14:28:17 7 have done that, so I did not do that.
 14:28:21 8 In other words, I did not design the
 14:28:23 9 experiments to bring the animals to the clinic. We
 14:28:27 10 know, it's proven over and over again, that if you
 14:28:30 11 keep exposing them, they will show up at the clinic
 14:28:33 12 with these various diseases.
 14:28:36 13 Q. Is it fair to say that you could not do
 14:28:38 14 the original research because it had already been
 14:28:40 15 done?
 14:28:41 16 A. It had already been done to show that if
 14:28:41 17 you keep exposing them, you will get -- some
 14:28:43 18 percentage of them. There is clearly genetic
 14:28:46 19 susceptibility, even though we try to factor a lot
 14:28:50 20 of that in our animal studies, there still is
 14:28:52 21 genetic susceptibility within the animals, as well.
 14:28:55 22 But my point is that I expose the
 14:28:57 23 animals for a brief period, enough to be able to
 14:29:01 24 sort out these answers of where the fibers go, what

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14:30:06 1 Q. So do you have a picture of a single
 14:30:09 2 room again so that we can see it closer?
 14:30:13 3 A. Exactly, that is where we are headed.
 14:30:16 4 I'm going to take a picture of this spot right
 14:30:19 5 here, immediately after the single hour of
 14:30:20 6 exposure. So that means every fiber we see on the
 14:30:23 7 carpet lands there during that first hour. That is
 14:30:26 8 the only way the fibers are going to get there.
 14:30:29 9 Q. Okay.
 14:30:29 10 A. So let's focus the microscope right
 14:30:32 11 here, right here, take a picture. Here is the
 14:30:35 12 carpet. This a 10-micron bar.
 14:30:39 13 Let me just make sure you understand.
 14:30:40 14 This space right here is this space right here, so
 14:30:44 15 we are looking at this spot right here. Remember,
 14:30:46 16 what we saw in the chrysotile fiber bundle. We saw
 14:30:51 17 straight fibers, we saw curly fibers, we saw long
 14:30:54 18 fibers, where this one goes, and we saw short
 14:30:59 19 fibers. Again, the same thing you saw sitting out
 14:31:01 20 in the dish, now you see in the lung because we
 14:31:05 21 made an aerosol of the dust where you have a whole
 14:31:08 22 variety of different shapes and sizes, and those
 14:31:10 23 are now sitting on the surface of the lung.
 14:31:13 24 The question, of course, scientists ask,

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14:31:15 1 Okay, they are there, what happens next? What I
 14:31:19 2 discovered was that these cells that make up this
 14:31:23 3 carpet are very active, and they respond in a
 14:31:28 4 dynamic way to the presence of these fibers. And
 14:31:31 5 what I published was that these cells actually come
 14:31:34 6 over the top of the fibers and shove a percentage
 14:31:38 7 of them underneath the carpet.
 14:31:40 8 Now, have we all heard, we have some
 14:31:43 9 asbestos in our lungs?
 14:31:46 10 Q. It's fair -- you are the first witness.
 14:31:48 11 That has only been heard by attorneys, so it's
 14:31:51 12 important to have the witness that has a background
 14:31:53 13 to say it.
 14:31:53 14 Can you explain to the jury how asbestos
 14:31:55 15 is in our lungs, just from walking around the
 14:31:56 16 streets outside?
 14:31:57 17 A. Right. So we all have some asbestos in
 14:32:01 18 our lungs. If that is the only place you got it,
 14:32:04 19 as I said before, I don't expect it to cause
 14:32:07 20 disease. But where is it? It's sitting under the
 14:32:10 21 carpet.
 14:32:11 22 So I have looked at a lot of human
 14:32:14 23 lungs, and I have looked at asbestos fibers in
 14:32:16 24 human lungs -- and the fibers largely, mostly, are

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14:32:18 1 sitting under the carpet. And they get there a few
 14:32:20 2 at a time and they land on the carpet, and they get
 14:32:22 3 taken up in and amongst our millions of airspaces,
 14:32:25 4 and we are designed to do that. Air-breathing
 14:32:29 5 animals are designed to inhale particles and store
 14:32:33 6 a lot of them over time, even millions of them.
 14:32:36 7 It's not all that many millions of fibers.
 14:32:39 8 Q. Have you been able to evaluate once the
 14:32:42 9 asbestos fibers get into the gas exchange and under
 14:32:45 10 the carpet what happens?
 14:32:47 11 A. Exactly. So that is the point. If you
 14:32:49 12 have a few fibers there, not a problem. As you
 14:32:53 13 keep loading that compartment, that can lead to the
 14:32:56 14 other -- the diseases asbestosis and mesothelioma.
 14:33:01 15 Lung cancer is a separate story. Lung
 14:33:04 16 cancer starts in the walls of the airway, so we are
 14:33:06 17 not worried about that right now in this
 14:33:09 18 discussion. We are talking about asbestosis.
 14:33:12 19 I told you, if you load this carpet with
 14:33:15 20 high levels for many decades, you can get scar
 14:33:18 21 tissue asbestosis. Now we are talking about the
 14:33:22 22 kind of exposure where some of those fibers, a
 14:33:25 23 sufficient number of those fibers that get under
 14:33:27 24 the carpet can reach the pleura and interact with

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14:33:30 1 the mesothelial cells. So the question is, how do
 14:33:31 2 they get there?
 14:33:31 3 Q. How do they get from the lung to the
 14:33:33 4 lining of the lung?
 14:33:34 5 A. The first thing that we find is that the
 14:33:38 6 carpet cells come up over the top of the fibers and
 14:33:42 7 cover them.
 14:33:43 8 You see how you can see the fibers there
 14:33:46 9 and you can't see them there? That is because they
 14:33:54 10 are covered by the carpet. And we can go to the
 14:33:54 11 next slide, and I'll show you that a little better.
 14:33:56 12 This is another experiment, another set of animals.
 14:33:59 13 Here is an airspace here, another airspace. Here
 14:34:02 14 is a little fiber bundle right here. There is a
 14:34:06 15 little fiber sort of sticking out here, but most of
 14:34:09 16 it is covered by the carpet.
 14:34:11 17 There is a little fiber bundle there.
 14:34:14 18 Some of it you can see, some are covered. Here is
 14:34:16 19 a fiber that is completely covered by the carpet,
 14:34:18 20 so this is a dynamic situation. The fibers that
 14:34:22 21 went in there 20 minutes earlier than this picture
 14:34:25 22 are already covered. The ones that just landed,
 14:34:28 23 not covered yet, so it's an ongoing process.
 14:34:33 24 Every time fibers land, some proportion

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14:34:37 1 of them get covered, some proportion of them get
 14:34:38 2 carried away by macrophages. It's an ongoing
 14:34:41 3 process.
 14:34:41 4 Now, notice these structures here that
 14:34:43 5 look like doughnuts.
 14:34:45 6 Q. What are those?
 14:34:46 7 A. Well, these are red blood cells, so
 14:34:49 8 these are red blood cells. The reason they look
 14:34:52 9 like doughnuts is because they have a depression in
 14:34:55 10 the center. Not a hole, but a depression.
 14:34:59 11 Now, this is a rat, and this red blood
 14:35:01 12 cell from this side to this side is 5 microns
 14:35:05 13 across. Now, that is the size of a rat red blood
 14:35:09 14 cell. That is also the size of your red blood
 14:35:12 15 cells, my red cells, dogs, cats, guinea pigs, rats
 14:35:16 16 mice, humans. We all have the same red blood cell
 14:35:20 17 size, shape, and function. That is what works best
 14:35:23 18 for air-breathing mammals, is to have a red blood
 14:35:27 19 cell that looks and acts like this.
 14:35:27 20 Q. Why are those red blood cells important,
 14:35:30 21 in terms of the asbestos fibers that are now
 14:35:33 22 underneath the carpet?
 14:35:35 23 A. Two things. First is that this shows
 14:35:36 24 you the pattern of blood flow. This is where the

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14:35:40 1 blood is flowing through the capillaries and the
 14:35:43 2 walls, and you can see this fiber going into the
 14:35:44 3 flow, and we demonstrated that asbestos fibers can
 14:35:48 4 get into the blood flow. Once they get into the
 14:35:50 5 blood, of course, they can go anywhere in the body.
 14:35:54 6 More importantly, the second point, is
 14:35:56 7 that wherever the blood flows in the body, there is
 14:35:58 8 another fluid called lymph, l-y-m-p-h.
 14:36:04 9 Lymph flows around the blood vessels.
 14:36:09 10 Wherever there is blood flowing, there is lymph
 14:36:12 11 flowing around it. Now, you heard about --
 14:36:12 12 Q. Why is that important?
 14:36:14 13 A. It's important because lymph, we found
 14:36:18 14 and other investigators have found, carries
 14:36:22 15 asbestos fibers to the pleura. The pattern of
 14:36:25 16 lymph flow in the lung is shown in the next slide
 14:36:29 17 in this diagram. This is another Netter diagram.
 14:36:32 18 Dr. Netter here is showing these
 14:36:34 19 lymphatic vessels, many of which end at the pleura,
 14:36:38 20 and if you look at the surface of the pleura, you
 14:36:42 21 can see this net-like pattern, and that is because
 14:36:45 22 of the lymphatic flow of the lung. So if asbestos
 14:36:48 23 fibers are getting into the lymph flow, then they
 14:36:51 24 can flow right to the pleura.

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14:36:54 1 Now, what is the proof that they are
 14:36:45 2 getting into the lymphatic flow? Well, the proof
 14:36:57 3 is found in these little green blobs right here,
 14:37:00 4 and these little green blobs are called lymph
 14:37:03 5 nodes. Maybe you have heard about your lymph
 14:37:04 6 nodes. Sometimes you can feel them swelling up in
 14:37:06 7 your armpits or on your neck or your groin, if you
 14:37:11 8 are fighting a cold because lymph nodes collect
 14:37:16 9 cells of the immune system. It turns out that
 14:37:21 10 these lymph nodes filter all of the lymph fluid.
 14:37:25 11 Wherever the lymph flows, there are
 14:37:30 12 these nodes that are filtering the lymph fluid. So
 14:37:31 13 if asbestos is flowing in the lymph, they should
 14:37:34 14 collect in the lymph nodes, and that's, in fact,
 14:37:37 15 what has been found. They have been found not only
 14:37:40 16 around the lung but in the peritoneal cavity, that
 14:37:44 17 holds our stomach and our intestines. Those lymph
 14:37:48 18 nodes also contain asbestos fibers for people that
 14:37:51 19 have been occupationally exposed.
 14:37:53 20 And, of course, that asbestos got into
 14:37:54 21 the lung, landed on the carpet, got taken up by the
 14:37:59 22 lymphatics and now is deposited around the lung,
 14:38:03 23 and some of it reaches the pleura.
 14:38:03 24 Q. Is there any type of asbestos out of the

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14:38:05 1 chrysotile, amosite, and crocidolite that gets from
 14:38:09 2 the lung to the pleura preferentially, like more
 14:38:13 3 often?
 14:38:13 4 A. Well, it looks like it. I mean, those
 14:38:14 5 are hard experiments to do, but the experiments
 14:38:17 6 that have been done with human lungs, looking at
 14:38:21 7 that question, chrysotile asbestos appears to
 14:38:27 8 predominate at the pleura. And it's probably
 14:38:30 9 because chrysotile asbestos breaks down more
 14:38:33 10 readily. It is more easily cleared out of the lung
 14:38:36 11 tissue and gets into the lymphatic flow. In fact,
 14:38:40 12 we will see that in the next slide.
 14:38:41 13 Q. I have heard that called preferential
 14:38:42 14 translocation. Am I using the right words?
 14:38:46 15 A. That's fine. Yes. Preferential
 14:38:48 16 translocation or movement to the pleura.
 14:38:49 17 Q. What does this next slide show?
 14:38:52 18 A. If we take a piece of lung tissue out of
 14:38:56 19 her, on this diagram and put it in the next
 14:38:57 20 diagram, it summarizes what I have told you about
 14:39:00 21 lymphatic flow. So let's do that. Let's cut a
 14:39:04 22 piece out here, so the pleura is on the right side,
 14:39:07 23 and here is the pleura now.
 14:39:10 24 And what the artist did is the fiber

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14:39:10 1 coming down and landing on the carpet. See, here
 14:39:13 2 is the airway, here are the little rooms, the
 14:39:16 3 artist has the fiber landing on the carpet. Now he
 14:39:20 4 has a little bit of fiber sticking out here, and I
 14:39:23 5 bet he forgot or did not know about this picture
 14:39:27 6 that I took, with a little bit of fiber sticking
 14:39:29 7 out and the rest of it hidden underneath the
 14:39:32 8 carpet.
 14:39:32 9 So what this artist then is showing is
 14:39:35 10 that little bit of fiber, and the rest of this that
 14:39:37 11 is sitting under the carpet, he says, Lymphatic
 14:39:41 12 fiber transport to the pleura, which is exactly
 14:39:44 13 what I'm saying. You can see this channel that
 14:39:47 14 that is carrying fibers to the pleura. Once the
 14:39:50 15 fiber is at the pleura, they can interact with the
 14:39:51 16 normal mesothelial cells that make up that thin,
 14:39:57 17 Saran Wrap-like coating around our lungs, and they
 14:40:01 18 are the target cells for mesothelioma.
 14:40:04 19 Q. Have you been able to do more research
 14:40:06 20 on those target cells?
 14:40:08 21 A. Right. So what we are doing is, we are
 14:40:10 22 looking at how fibers interact with cells. Some
 14:40:14 23 investigators use mesothelioma cells, and I'll show
 14:40:16 24 you that. Others use all different kinds of cells.

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14:40:19 1 They all tell us something about what asbestos
 14:40:23 2 does.
 14:40:23 3 Q. So what does that next slide tell us?
 14:40:26 4 A. Okay. Let's stick with this. So this
 14:40:28 5 is -- so we have the fibers at the target cell.
 14:40:32 6 And I'm going to spend the rest of the time -- I
 14:40:35 7 just have a few more slides, and I'm going to spend
 14:40:38 8 the rest of the time explaining how asbestos acts
 14:40:41 9 as a carcinogen or cancer-causing agent.
 14:40:46 10 I'll start with this slide. This is the
 14:40:47 11 cover of the proceedings of the meeting I was at a
 14:40:49 12 few years ago, and the topic of the meeting was how
 14:40:52 13 fibers cause cancer. Carcino, cancer; genesis,
 14:40:57 14 formation. How fibers cause cancer.
 14:40:59 15 I gave a talk at this meeting, among
 14:41:02 16 other investigators, and we talked about the
 14:41:04 17 cellular aspects. And I told you about -- and I
 14:41:06 18 have shown you cells and I have shown you how cells
 14:41:11 19 pick up asbestos fibers, but you can't talk about
 14:41:13 20 carcinogenesis unless you talk about the molecular
 14:41:17 21 aspects of disease. That means your genes. Cancer
 14:41:21 22 is a genetic disease.
 14:41:24 23 Q. So have you looked at the molecular
 14:41:28 24 aspects?

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14:41:28 1 A. Yes. In fact, the department that I'm
 14:41:30 2 in right now at North Carolina State is called
 14:41:34 3 molecular biomedical sciences. That is the name of
 14:41:38 4 our department. So biology of medicine,
 14:41:42 5 biomedical, biology of medicine, at the molecular
 14:41:45 6 level, at the genetic level. That is where we are
 14:41:47 7 today. That is where science is, trying to
 14:41:50 8 understand what happens to genes and how they
 14:41:52 9 control the disease.
 14:41:52 10 Q. What have you been able to determine?
 14:41:54 11 A. Right. So I'll talk to you today about
 14:41:56 12 the molecular aspects of carcinogenesis, and one of
 14:42:00 13 the ways that we do that is by taking cells out of
 14:42:05 14 humans or out of animals and put those cells in a
 14:42:07 15 dish. You take millions of cells and put them in a
 14:42:11 16 dish and give them the right nutrients and then
 14:42:14 17 they grow and multiply in the dish, if you give
 14:42:14 18 them the right kinds of nutrients.
 14:42:17 19 And then you can add the carcinogens or
 14:42:20 20 the suspected agents you want to study and you can
 14:42:21 21 watch those interactions, so it's a very helpful
 14:42:24 22 kind of experiment. And on the cover of this
 14:42:28 23 proceeding, there were two cells like that, two out
 14:42:32 24 of millions that are in the dish. There are a

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14:42:33 1 picture of two of them. You can see one of them
 14:42:34 2 here, and there is another one over here.
 14:42:37 3 And fibers have been added to these
 14:42:40 4 cells, and you can see there is a long fiber here,
 14:42:43 5 some short fibers. You notice how these fibers are
 14:42:47 6 collected around the center circle in the cell.
 14:42:51 7 Notice that the fibers are excluded from the center
 14:42:55 8 circle.
 14:42:56 9 Well, the center circle of the cell is
 14:42:59 10 called the nucleus and the nucleus of our cells
 14:43:02 11 contains all of our DNA, all of our genes. DNA
 14:43:06 12 simply means genetic material. So the DNA is in
 14:43:10 13 that center circle, the nucleus, and we have this
 14:43:10 14 membrane around the nucleus that protects our DNA.
 14:43:14 15 That is wonderful.
 14:43:16 16 Our DNA is protected, but one thing that
 14:43:20 17 scientists have known for a long time is when cells
 14:43:24 18 divide, that is, they replicate, make new cells, we
 14:43:28 19 lose that protective nuclear membrane. So we asked
 14:43:32 20 in my laboratory what would happen if we added
 14:43:36 21 asbestos and minerals to the cells when they are
 14:43:39 22 dividing, and I can show you that.
 14:43:41 23 Q. Do you have pictures of the cell
 14:43:44 24 division?

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14:43:44 1 A. I do. As we always should look at what
 14:43:47 2 is normal first, this is what is supposed to
 14:43:50 3 happen. Here are three cells, one, two, three.
 14:43:55 4 It's the two cells on the outside are not dividing.
 14:44:00 5 Here is the nucleus. The DNA has been stained blue
 14:44:01 6 so that you can see it.
 14:44:02 7 And in the center, the center cell has
 14:44:05 8 received a signal to divide. Now, I'll explain
 14:44:09 9 what that means. If you fall down and you scrape
 14:44:12 10 your skin, you want to grow more skin cells just
 14:44:16 11 like the ones that you had, and so what happens is
 14:44:18 12 that serum that you have in your blood sends a
 14:44:20 13 growth signal to the surrounding skin cells and
 14:44:22 14 they start to divide.
 14:44:23 15 Normally, your skin has a growth rate of
 14:44:26 16 about 10 percent. If you look at your skin
 14:44:29 17 anywhere on your skin, you would have about 10
 14:44:31 18 percent of those cells are making new cells, but if
 14:44:34 19 you look around a wound, 40 or 50 percent of those
 14:44:38 20 cells are growing because they need to replace that
 14:44:41 21 wound. Now, all of that growth -- and this is very
 14:44:43 22 important to cancer. All of that growth is tightly
 14:44:46 23 regulated by sets of genes.
 14:44:49 24 We all have -- humans have about 20,000

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14:44:52 1 or so genes, and you can see what a few of those
 14:44:56 2 genes do. You look around, you see different hair
 14:44:59 3 color, eye color, skin color, but that is only what
 14:45:02 4 a few of those genes can do. Most of the genes you
 14:45:05 5 don't get to see what they are doing. They are
 14:45:07 6 making this fantastic waterproof skin, they are
 14:45:10 7 making the enzymes that digest our food, et cetera.
 14:45:13 8 Of those 20,000 genes, about 100 or so
 14:45:17 9 of them are dedicated to controlling growth, cell
 14:45:22 10 growth.
 14:45:22 11 Q. Why is that important?
 14:45:23 12 A. Well, cancer -- cancer, and this is the
 14:45:28 13 simplest definition of cancer. Cancer is the loss
 14:45:30 14 of control of cell growth. Cancer is the loss of
 14:45:34 15 control of cell growth.
 14:45:36 16 Cancer occurs when you have errors or
 14:45:39 17 mistakes in a set of genes, that is 100 or so that
 14:45:44 18 I was telling you about. Errors or mistakes in a
 14:45:48 19 set of genes that control cell growth. That is
 14:45:51 20 what causes cancer.
 14:45:52 21 Now, go back to the dividing cell. This
 14:45:56 22 cell received a signal to divide because we want to
 14:45:59 23 make some new cells. The object is to make two new
 14:46:03 24 cells just like the original one. The only way you

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14:46:03 1 are going to do that is by making another set of
 14:46:06 2 DNA, just like the original set, and the way that
 14:46:10 3 we do that is by condensing the DNA into these
 14:46:14 4 white threads called chromosomes. So chromosomes
 14:46:21 5 are bands of condensed DNA.
 14:46:23 6 Q. Is there a name for the new cell?
 14:46:26 7 A. Yes, they are called daughter cells. We
 14:46:30 8 are going to see those in one second. Let's look
 14:46:30 9 at our chromosomes first.
 14:46:30 10 Q. Okay. What is that next slide?
 14:46:32 11 A. What I have done is, I have opened up
 14:46:33 12 the cell and spread out the chromosomes so you can
 14:46:37 13 see them. And humans have 23 pairs of chromosomes.
 14:46:40 14 You have one from your mother and one from your
 14:46:42 15 father, and notice the light and dark bands that
 14:46:46 16 line up on the chromosomes.
 14:46:48 17 Those light and dark bands represent
 14:46:51 18 where our different genes are, and there is a human
 14:46:52 19 chromosome map that has done a pretty good job of
 14:46:54 20 knowing where each of our genes is.
 14:46:58 21 The important point for this discussion
 14:47:00 22 is that when you make new cells, each gene must be
 14:47:07 23 on the correct chromosome in the right place on
 14:47:10 24 that chromosome. There is no mixing and matching

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14:47:13 1 allowed.
 14:47:14 2 So you have to have what is called
 14:47:17 3 faithful replication, and let's finish that up here
 14:47:20 4 on this slide. Here is normal cell division. You
 14:47:23 5 have the chromosomes forming. Now they are
 14:47:26 6 dividing, they are replicating, so that you have
 14:47:30 7 made perfect copies. If you have faithful
 14:47:31 8 replication, you get two new daughter cells just
 14:47:34 9 like the original. That is what is supposed to
 14:47:39 10 happen every time.
 14:47:39 11 Q. What happens sometimes when asbestos
 14:47:41 12 gets in the picture?
 14:47:42 13 A. Right. So that's -- this is from
 14:47:45 14 experiment from my laboratory, and over here in
 14:47:48 15 panel A, you can see a normal divided cell, no
 14:47:52 16 fibers, half the chromosomes one side, half the
 14:47:56 17 other, and you get two new daughter cells just like
 14:47:59 18 you're supposed to.
 14:48:00 19 Over here in panel B, there's an
 14:48:03 20 amphibole fiber that's been added, so the cell's
 14:48:06 21 about 40 microns from one end to the next, so this
 14:48:10 22 fiber is about 30 microns, 20 microns, 10 microns,
 14:48:14 23 5-micron fibers, most of the DNA has moved to the
 14:48:19 24 new forming cells, but some of the DNA is bound to

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14:48:22 1 the surface of the asbestos.
 14:48:23 2 Q. Is that good?
 14:48:24 3 A. That's not good, and that results in a
 14:48:27 4 condition called aneuploidy. "Aneuploidy" simply
 14:48:33 5 means abnormal chromosome separation.
 14:48:36 6 Now, let's see that in mesothelial
 14:48:39 7 cells, and then I'll talk about -- and this is the
 14:48:40 8 next-to-the-last slide, and I'll explain the
 14:48:44 9 significance of aneuploidy.
 14:48:47 10 So these are mesothelial cells,
 14:48:48 11 chrysotile has been added, here's a normal cell,
 14:48:52 12 half the chromosome to the one side, half to the
 14:48:54 13 other, two new daughter cells form.
 14:48:56 14 These mesothelial cells, the daughter
 14:48:58 15 cells actually have formed, but there's a
 14:49:01 16 chrysotile fiber extending between the two cells,
 14:49:03 17 and there's some DNA bound to the asbestos, to the
 14:49:07 18 chrysotile. That results in an aneuploid.
 14:49:11 19 Q. What does "aneuploid" mean?
 14:49:13 20 A. So aneuploid, I just -- the definition
 14:49:15 21 means abnormal chromosome separation, but the
 14:49:19 22 important point here is that these are not cancer
 14:49:22 23 cells, but the door has been opened.
 14:49:28 24 I told you that cancer is the loss of

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14:49:30 1 control of cell growth, and that occurs where there
 14:49:33 2 are errors or mistakes in genes that control cell
 14:49:36 3 growth.
 14:49:36 4 One of the features of these growth cell
 14:49:40 5 genes is when a cell becomes aneuploid, it dies.
 14:49:43 6 We're always getting aneuploid cells. You get
 14:49:46 7 sunburn, you get a bunch of aneuploid cells that
 14:49:49 8 have DNA damage, but they all die, and they die
 14:49:52 9 because we have a set of genes that sends these
 14:49:55 10 damaged cells down a death pathway, and you don't
 14:49:59 11 hear anything more about them. That's what's
 14:50:01 12 supposed to happen every time.
 14:50:03 13 But what if this bunch of DNA that's not
 14:50:06 14 in its respective location and it's not working --
 14:50:09 15 what if there is a set or -- one or a set of genes
 14:50:12 16 that controls the death pathway and they're
 14:50:15 17 non-functional? Now the cell can go on and pass on
 14:50:18 18 that error. That's a requirement for cancer.
 14:50:23 19 And this is the last slide, and with
 14:50:25 20 this last slide, I can summarize what I've told you
 14:50:27 21 about cancer and explain what's going on in the
 14:50:31 22 latency period this many decades.
 14:50:34 23 Q. Could you please show us?
 14:50:35 24 A. So this is a diagram that lays out the

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14:50:38 1 single layer of cells very much like mesothelial
 14:50:42 2 cells. They're not specifically for mesothelioma
 14:50:44 3 at all, it's a general principle related to the
 14:50:47 4 cancer formation, but these are single cells much
 14:50:50 5 like mesothelial cells. You can see the nucleus
 14:50:53 6 and the cells are adjacent to each other, and now
 14:50:56 7 the artist gives us a couple lightning bolts and
 14:51:00 8 says, "DNA damage."
 14:51:02 9 Now, lightning doesn't cause DNA damage,
 14:51:03 10 as far as I know, but this is something from the
 14:51:04 11 environment, something from the outside has reached
 14:51:07 12 the pleura, has reached the mesothelial cell and
 14:51:10 13 caused DNA damage.
 14:51:12 14 Q. So in this case, if there was a fiber
 14:51:14 15 coming in, this graph would be showing it through
 14:51:18 16 the lens?
 14:51:18 17 A. Sure. Instead of lightning, you would
 14:51:21 18 have asbestos fibers.
 14:51:21 19 Q. Okay.
 14:51:22 20 A. You can put any carcinogen in there,
 14:51:24 21 same concept.
 14:51:25 22 And when you have DNA damage, I told you
 14:51:27 23 that one of the things that should happen is that
 14:51:30 24 the cells die, and the artist knows that, and he

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14:51:33 1 has one of these cells -- one of the daughter cells
 14:51:36 2 off into the upper left-hand corner to die, and you
 14:51:39 3 can see the DNA is messed up and the surface of the
 14:51:42 4 cell is bubbled up and there's a macrophage coming
 14:51:44 5 in here to eat it up and this cell as going to die
 14:51:47 6 and you'll never hear a thing about it.
 14:51:50 7 But the artist also knows for a cancer
 14:51:53 8 to develop, one of those daughter cells has to live
 14:51:55 9 with that error so it can be passed on, so here's
 14:51:58 10 the other daughter cell, and you can see the
 14:51:59 11 chromosomes here, and then the artist has this
 14:52:02 12 tumor. It's the tumor genesis or tumor formation.
 14:52:06 13 He has this tumor with some oddly shaped
 14:52:10 14 chromosomes and he's got all the cells out here
 14:52:13 15 forming the cancer that brought this person to the
 14:52:16 16 clinic.
 14:52:16 17 Now, from the first daughter cell to the
 14:52:19 18 time this tumor started to form is the latency
 14:52:24 19 period. Now I'll take the last minute to explain
 14:52:27 20 what's going on in that latency period.
 14:52:29 21 So think about the single cell sitting
 14:52:31 22 on a mesothelial surface now. It's got an error
 14:52:37 23 and it looks and acts just like a normal
 14:52:39 24 mesothelial cell, and those cells can sit for

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14:52:42 1 months without doing anything except just acting
 14:52:45 2 like a normal mesothelial cell, and it can sit
 14:52:50 3 there and it can start to divide and it passes on
 14:52:52 4 that genetic error two cells, four cells, eight
 14:52:57 5 cells. Now you have eight cells with that one
 14:53:01 6 genetic error sitting on the mesothelial surface
 14:53:01 7 months later.
 14:53:02 8 Well, three or four or five of them die.
 14:53:06 9 I can't tell you how many, but they die because
 14:53:09 10 they're picked up by the immune system or some of
 14:53:11 11 those -- we have a whole set of these growth
 14:53:13 12 control genes that can kill the cells, but you
 14:53:16 13 still have two or three cells with an error, and
 14:53:18 14 one of them gets hit by another asbestos fiber, and
 14:53:22 15 it has a second error and so now it's sitting there
 14:53:26 16 with the second error. It can sit there for months
 14:53:29 17 and looking just like a normal mesothelial cell and
 14:53:33 18 then months later it starts to divide again, two
 14:53:35 19 cells, four cells, eight cells all with two errors.
 14:53:39 20 And then some of those die and one --
 14:53:41 21 okay. Am I making the point? In other words, the
 14:53:43 22 idea is that you keep generating new cells with
 14:53:48 23 genetic errors that are accumulating additional
 14:53:52 24 errors. That's the key. They have to accumulate

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14:53:56 1 additional errors on the pleural surface, and then
 14:53:59 2 eventually -- I don't know what the -- the latency
 14:54:05 3 is in this case, but let's say 50 years later, you
 14:54:08 4 have a series of cells on the mesothelial surface
 14:54:11 5 with different combinations of genetic errors.
 14:54:16 6 One of those gets that final error that
 14:54:20 7 was sufficient for that person to grow out cancer,
 14:54:25 8 and that's why the artist made this all the same
 14:54:28 9 color, because the cancer that develops all came
 14:54:30 10 from that one cell many decades later that had
 14:54:35 11 accumulated sufficient errors for that person.
 14:54:38 12 Q. Is there any way to isolate one of those
 14:54:40 13 exposures that brought in asbestos that caused an
 14:54:43 14 error and say that one is what caused it, or is it
 14:54:47 15 the interplay of all the different exposure?
 14:54:50 16 A. No, I don't think you can sort out
 14:54:53 17 one -- I mean, it's not one exposure that caused
 14:54:56 18 the disease; it's the series. It's like -- I mean,
 14:55:01 19 the best analogy, if -- should I take my seat?
 14:55:05 20 Q. Sure. I'm sorry.
 14:55:06 21 A. Excuse me.
 14:55:12 22 THE COURT: While you're doing that, how much
 14:55:15 23 longer do you have?
 14:55:15 24 MS. DEAN: It's my last question.

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14:55:17 1 THE COURT: Continue.
 14:55:18 2 BY THE WITNESS:
 14:55:18 3 A. So the best analogy that I have for that
 14:55:21 4 question is cigarette smoking, because
 14:55:27 5 somebody before they get a lung cancer usually
 14:55:29 6 starts smoking many decades before, and they --
 14:55:32 7 maybe they started smoking cartons of Camels and
 14:55:35 8 then they went to Marlboros and then Lucky Strike,
 14:55:39 9 whatever it was they smoked, and then they get the
 14:55:42 10 cancer and you go back and ask the question: Which
 14:55:44 11 pack of cigarettes -- which carton did it? Which
 14:55:48 12 cigarette did it? You know, you can't do that.
 14:55:51 13 It's the same idea. Every time you take
 14:55:53 14 a breath of smoke, you introduce carcinogens to the
 14:55:56 15 target cells in the airways. Every time someone's
 14:55:59 16 exposed to asbestos, some proportion of those
 14:56:02 17 fibers reach those target cells in the mesothelial
 14:56:05 18 surface. Same concept.
 14:56:07 19 MS. DEAN: I want to thank you very much for
 14:56:09 20 your time. I think some lawyers may ask you some
 14:56:12 21 questions.
 14:56:12 22 THE COURT: Before we get to that, we'll have
 14:56:14 23 cross-examination after our afternoon break. We'll
 14:56:17 24 take about ten minutes.

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14:56:17 1 (WHEREUPON, the trial was recessed
 15:10:03 2 from 2:56 to 3:10 p.m.)
 15:10:03 3 THE COURT: Welcome back, ladies and gentlemen
 15:10:08 4 of the jury.
 15:10:08 5 Mr. Fitzpatrick, cross-examination.
 15:10:10 6 MR. FITZPATRICK: Thank you, your Honor.
 15:10:12 7 THE COURT: Before you begin, ladies and
 15:10:13 8 gentlemen, I want to try to keep you updated each
 15:10:15 9 day. I don't think we'll be going past 4:30,
 15:10:18 10 probably earlier than that you'll be released
 15:10:20 11 today. I just wanted to let you know.
 15:10:22 12 Okay. Excuse me. Go ahead.
 15:10:24 13 MR. FITZPATRICK: Sure.
 15:10:25 14 CROSS-EXAMINATION
 15:10:25 15 BY MR. FITZPATRICK:
 15:10:25 16 Q. Good afternoon, Dr. Brody.
 15:10:27 17 A. Good afternoon.
 15:10:28 18 Q. You and I have met many times in courts
 15:10:30 19 across this country, haven't we?
 15:10:32 20 A. At least ten. I'm not sure.
 15:10:33 21 Q. If not more. In fact, just two months
 15:10:36 22 ago, you and I chatted about the very same thing
 15:10:39 23 you talked about in L.A., didn't we?
 15:10:41 24 A. Sure.

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15:10:41 1 Q. Do you have any more trials to get to
 15:10:45 2 this week?
 15:10:45 3 A. No.
 15:10:45 4 Q. You have some next week?
 15:10:47 5 A. No.
 15:10:47 6 Q. You don't have the Levitch case or the
 15:10:52 7 BIA case that you're testifying in?
 15:10:53 8 A. Those are names that are not ringing a
 15:10:55 9 bell. If someone drags me out there and can get me
 15:10:58 10 to go out there, that will happen.
 15:10:59 11 Q. My goal is to get you out in about 20
 15:11:01 12 minutes or at least I should finish in 20. I'm
 15:11:04 13 going to ask the same questions I've often asked,
 15:11:06 14 so you know what's coming, fair?
 15:11:09 15 A. I hope so.
 15:11:09 16 Q. Okay. You indicated you're a professor
 15:11:11 17 at North Carolina State, but my understanding is
 15:11:14 18 you're not teaching medical students.
 15:11:16 19 Is that fair?
 15:11:16 20 A. That's right, not with this appointment.
 15:11:18 21 Q. And you have not been teaching, then,
 15:11:21 22 since at least you got there in 2006?
 15:11:22 23 A. That's right.
 15:11:23 24 Q. And as you sit here, you're not an MD,

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15:11:26 1 so by definition you're not a pulmonary physician,
 15:11:30 2 a nephrologist or an oncologist?
 15:11:32 3 A. That's correct.
 15:11:33 4 Q. You're not an industrial hygienist, is
 15:11:35 5 that fair?
 15:11:35 6 A. One of the many things I'm not, that's
 15:11:37 7 correct.
 15:11:37 8 Q. Okay. But you certainly travel around
 15:11:39 9 the country and you testify in a lot of courtrooms,
 15:11:44 10 fair?
 15:11:44 11 A. Sure.
 15:11:44 12 Q. You've been doing asbestos litigation
 15:11:47 13 for about 20 years, fair?
 15:11:50 14 A. Right. Not at the rate I'm doing now,
 15:11:53 15 but sure.
 15:11:53 16 Q. I understand. In fact, that was at
 15:11:55 17 least -- you anticipated the question.
 15:11:58 18 Not at the current rate; you started in
 15:12:00 19 about 1990 with a couple of trials, and it's built
 15:12:02 20 up, fair?
 15:12:03 21 A. Right.
 15:12:04 22 Q. All right. Your first trial was 1990,
 15:12:07 23 as I said, and I think by 1992, you had told us you
 15:12:11 24 had made about \$20,000 from testifying in asbestos,

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15:12:15 1 fair?
 15:12:15 2 A. Right.
 15:12:15 3 Q. It continued to increase so that by
 15:12:20 4 1996, you were making about a hundred thousand
 15:12:22 5 dollars a year testifying, fair?
 15:12:23 6 A. Right.
 15:12:24 7 Q. And I think when I examined you, I asked
 15:12:29 8 you -- the year before in the Shahabi case in Los
 15:12:35 9 Angeles, you had indicated that for the last seven
 15:12:38 10 years, you had averaged \$250,000 a year, fair?
 15:12:40 11 A. In the last seven years from now?
 15:12:42 12 Q. Yes.
 15:12:43 13 A. It's between 200 and 250, yes.
 15:12:45 14 Q. Okay. My question is: Do you recall
 15:12:46 15 saying for the last seven years, you have averaged
 15:12:49 16 about \$250,000 a year just --
 15:12:53 17 A. Well, I may have said that, but the fact
 15:12:55 18 is that I've made between 200, 250,000 over the
 15:12:58 19 last seven years.
 15:12:59 20 Q. And certainly 250,000 is about 60
 15:13:03 21 percent of your income, correct?
 15:13:05 22 A. Yes, yes.
 15:13:06 23 Q. Now, I think at least as of two months
 15:13:09 24 ago, you said that you averaged two to three trials

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15:13:14 1 a month --
 15:13:15 2 A. Correct.
 15:13:15 3 Q. -- that you testified?
 15:13:16 4 A. That's right.
 15:13:17 5 Q. And depositions can be anywhere from
 15:13:23 6 giving two to four depositions a month --
 15:13:25 7 A. That can happen.
 15:13:26 8 Q. -- fair?
 15:13:27 9 A. That can happen, yes.
 15:13:28 10 Q. So we have 30 to 36 trials a year, 24 to
 15:13:34 11 48 depositions a year just in asbestos litigation,
 15:13:39 12 fair?
 15:13:39 13 A. Well, that's all I do is asbestos.
 15:13:43 14 Q. I agree, that is indeed all you do --
 15:13:45 15 A. In litigation.
 15:13:46 16 Q. -- is testify in asbestos litigation.
 15:13:50 17 Is that what you just told me?
 15:13:51 18 A. Of the litigation I do, it is only
 15:13:53 19 related to asbestos, that's correct.
 15:13:54 20 Q. And although you mentioned in response
 15:13:57 21 to the plaintiff that you testify for defendants,
 15:14:01 22 the few times you've testified for defendants are
 15:14:04 23 when the defendants are contesting each other in
 15:14:07 24 what is called coverage litigation, fair?

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15:14:09 1 A. Yes. Interesting process, yes.
 15:14:11 2 Q. It is, but for purposes of a personal
 15:14:16 3 injury lawsuit brought on behalf of a plaintiff who
 15:14:19 4 is claiming injury for exposure, 100 percent of
 15:14:22 5 your time is for the plaintiffs, is that fair?
 15:14:25 6 A. Yes.
 15:14:26 7 Q. And if we then combine the few times the
 15:14:29 8 defense has called you in a coverage dispute, that
 15:14:32 9 brings us to about 98 percent of your entire
 15:14:35 10 litigation career is for the plaintiff, fair?
 15:14:37 11 A. That's fine.
 15:14:38 12 Q. You've testified for many times for a
 15:14:46 13 law firm called Waters & Krause out of Texas.
 15:14:50 14 Is that true?
 15:14:51 15 A. Yes.
 15:14:51 16 Q. In fact, Ms. Dean was -- is with the
 15:14:55 17 firm that actually worked with that firm and then
 15:14:57 18 broke up, Simons Eddins & Greenstone, correct?
 15:15:01 19 A. Correct.
 15:15:01 20 Q. Anywhere from 20 to 40 times in trial
 15:15:03 21 for those various firms, fair?
 15:15:05 22 A. That's probably right.
 15:15:06 23 Q. States, my last count when you were
 15:15:13 24 going through the states on the various transcripts

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15:15:16 1 is about 25 states where you've appeared for
 15:15:18 2 plaintiffs.
 15:15:19 3 Sound accurate?
 15:15:20 4 A. If you're keeping that good a track of
 15:15:22 5 me, that's fine.
 15:15:23 6 Q. And when you come to talk, you give the
 15:15:27 7 same speech, the same script on the rat studies and
 15:15:32 8 you go through those same slides in every
 15:15:35 9 courtroom, do you not?
 15:15:35 10 A. Well, sure. I don't know why you call
 15:15:37 11 it a script, though. When I lecture the medical
 15:15:40 12 students and give them the information they need, I
 15:15:42 13 don't think you'd call that a script, would you?
 15:15:44 14 Q. My question -- it was not a difficult
 15:15:46 15 question.
 15:15:47 16 My question is: When you come into
 15:15:49 17 trial, as you said, "Give me the pointer, I'll go
 15:15:52 18 through the clicker," those are the slides you go
 15:15:54 19 through all the time, fair?
 15:15:56 20 A. Just like I do in medical school,
 15:15:58 21 exactly.
 15:15:58 22 Q. Indeed, we saw that slide and that
 15:16:02 23 microscope that's about 20 years old, is it not?
 15:16:05 24 A. You can tell by the gray in my hair

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15:16:07 1 probably, right.
 15:16:08 2 Q. And the motorcycle -- the kid on the
 15:16:10 3 motorcycle where you've got the macrophage going to
 15:16:14 4 get that pollen, you've been using that slide since
 15:16:16 5 the '80s, fair?
 15:16:17 6 A. Absolutely.
 15:16:18 7 Q. You testify, for example, a lot for
 15:16:22 8 Peter Angelos, a plaintiff's lawyer who happens to
 15:16:25 9 own the Orioles, fair?
 15:16:26 10 A. Once or twice year, yes.
 15:16:29 11 Q. And, indeed, because of your
 15:16:31 12 relationship with him, you've been a guest in his
 15:16:33 13 private box at Orioles games, fair?
 15:16:37 14 A. Great place to watch a ball game. I
 15:16:39 15 wish the Cubs owner would use me.
 15:16:42 16 Q. I'm sure you do.
 15:16:44 17 In fact, the plaintiff lawyers like you
 15:16:46 18 so much, when they want you, they'll actually fly
 15:16:50 19 you out in a private plane to get you to places,
 15:16:53 20 fair?
 15:16:53 21 A. That has happened a couple of times,
 15:16:55 22 yes.
 15:16:55 23 Q. In fact, I think you said you wish it
 15:16:57 24 would happen more, fair?

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15:16:58 1 A. I do, yes, indeed.
 15:17:00 2 Q. Now, you charge \$475 an hour, do you
 15:17:06 3 not?
 15:17:06 4 A. Right.
 15:17:07 5 Q. That's up from last year. It was 450
 15:17:12 6 last year?
 15:17:12 7 A. That's right.
 15:17:13 8 Q. So did you fly in this morning or last
 15:17:16 9 night?
 15:17:16 10 A. This morning.
 15:17:17 11 Q. So will you be charging an eight-hour
 15:17:19 12 day for today? So we're talking about 3800 bucks,
 15:17:23 13 right?
 15:17:24 14 A. By the time I get home, yes.
 15:17:26 15 Q. Now, I'm just curious. There are two
 15:17:30 16 defendants in the case.
 15:17:31 17 Do you know who I represent?
 15:17:32 18 A. No.
 15:17:32 19 Q. Do you know who they represent?
 15:17:34 20 A. No.
 15:17:34 21 Q. Have you read the deposition in this
 15:17:39 22 case of any of the coworkers?
 15:17:40 23 A. No.
 15:17:41 24 Q. Have you read any of the medical

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15:17:45 1 records, reviewed any of the medical records of
 15:17:47 2 Mr. Mulcahy?
 15:17:48 3 A. No.
 15:17:48 4 Q. Have you looked at any corporate
 15:17:52 5 documents of any of the defendants who might be
 15:17:55 6 here?
 15:17:55 7 A. That wouldn't have anything to do with
 15:17:57 8 my testimony, so no.
 15:17:57 9 Q. I'm sorry. The question is simple.
 15:17:59 10 Did you look at any corporate documents
 15:18:01 11 at all?
 15:18:02 12 A. The answer is simple. No.
 15:18:04 13 Q. So in other words, you come to all these
 15:18:07 14 trials, you don't read the plaintiff's deposition,
 15:18:11 15 if there's been one, you don't read the coworker
 15:18:15 16 depositions, you don't look at the medical records,
 15:18:17 17 you don't look at the corporate documents; you just
 15:18:20 18 come and talk about the rat studies?
 15:18:23 19 MS. DEAN: Objection, cumulative, compound.
 15:18:25 20 THE COURT: Overruled.
 15:18:27 21 BY THE WITNESS:
 15:18:28 22 A. Right. Those documents don't have any
 15:18:29 23 impact on my testimony, that's correct.
 15:18:32 24 BY MR. FITZPATRICK:

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15:18:32 1 Q. You testified that the rat studies
 15:18:35 2 helped us learn a lot about asbestosis?
 15:18:39 3 A. Well, about -- about a number of
 15:18:41 4 different diseases, including asbestosis, sure.
 15:18:44 5 Q. That was one of the purposes of those
 15:18:46 6 studies, I think you've told me before, to
 15:18:50 7 understand asbestosis?
 15:18:51 8 A. Sure.
 15:18:51 9 Q. Now, you understand Mr. Mulcahy did not
 15:18:54 10 have asbestosis? Do you understand that?
 15:18:56 11 A. Well, I was asked to --
 15:18:58 12 Q. I'm sorry. My question is: Do you
 15:19:01 13 understand that he doesn't have asbestosis?
 15:19:02 14 A. I understand he has mesothelioma.
 15:19:03 15 Q. So when you're talking about lung
 15:19:05 16 cancer, he doesn't have that, but the gentleman
 15:19:08 17 here in this case has mesothelioma?
 15:19:10 18 A. I thought I did talk about mesothelioma.
 15:19:13 19 Q. And has the plaintiff shared with you
 15:19:17 20 that the defendants in this case are not contesting
 15:19:19 21 that mesothelioma was caused by asbestos?
 15:19:23 22 A. That's good.
 15:19:24 23 Q. My question is: Did they share that
 15:19:27 24 with you before you testified?

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15:19:28 1 A. That's immaterial to me. No, they did
 15:19:30 2 not.
 15:19:30 3 Q. Now, let's talk a little bit about fiber
 15:19:34 4 potency that you discussed.
 15:19:38 5 There are two families of -- generally
 15:19:42 6 of asbestos fibers, serpentine and the amphibole,
 15:19:45 7 is that correct?
 15:19:45 8 A. As I explained, yes.
 15:19:47 9 Q. And the amphiboles are the amosite and
 15:19:53 10 chrysotile, is that correct?
 15:19:54 11 A. That's right.
 15:19:55 12 Q. And you are certainly familiar with
 15:19:59 13 literature that's been published by very prominent
 15:20:02 14 scientists that talk about the potency of being
 15:20:05 15 anywhere from 300 to 500 times, amphiboles being 3
 15:20:10 16 to 500 times more potent than chrysotile, correct?
 15:20:15 17 A. Well, there's one paper that has those
 15:20:17 18 numbers, yes.
 15:20:18 19 Q. Well, my understanding is that last
 15:20:20 20 year, you thought 300 times greater than chrysotile
 15:20:24 21 was a pretty reasonable number for amosite, true or
 15:20:28 22 false?
 15:20:29 23 A. Well, that's fine. I'm --
 15:20:30 24 Q. I'm asking you.

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15:20:32 1 My question to you is: In your medical
 15:20:35 2 opinion, is amosite 300 times more potent to cause
 15:20:39 3 mesothelioma than chrysotile?
 15:20:40 4 A. Well, I don't know --
 15:20:42 5 MS. DEAN: Your Honor, could I just ask that
 15:20:43 6 he allow the witness to finish and not interrupt in
 15:20:46 7 the middle of a sentence?
 15:20:47 8 THE COURT: I'm not sure that was happening,
 15:20:48 9 but, Doctor, if you feel that you're cut off, you
 15:20:53 10 can let counsel know.
 15:20:53 11 BY MR. FITZPATRICK:
 15:20:57 12 Q. Can you answer my question?
 15:20:58 13 A. Indeed I can answer your question.
 15:20:59 14 My answer is I don't know if it's 300
 15:21:01 15 times because there's one paper that describes
 15:21:04 16 those numbers. I think they might be reasonable
 15:21:06 17 numbers. I don't have a problem with the number.
 15:21:08 18 It's just that that's not my number, so I'm not
 15:21:11 19 going to tell the jury that it's 300 times more
 15:21:13 20 potent because I don't know that.
 15:21:14 21 Q. Well, let's see.
 15:21:16 22 MR. FITZPATRICK: May I approach, your Honor?
 15:21:18 23 BY MR. FITZPATRICK:
 15:21:18 24 Q. Do you remember testifying just two

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15:21:20 1 months ago in the Pelletier case in Los Angeles,
 15:21:25 2 June 24, where I was cross-examining you?
 15:21:28 3 A. Well, I --
 15:21:29 4 Q. My first question is: Do you remember?
 15:21:31 5 A. Yes.
 15:21:33 6 MR. FITZPATRICK: May I approach?
 15:21:34 7 BY MR. FITZPATRICK:
 15:21:35 8 Q. And my question to you is: Do you
 15:21:40 9 recall here --
 15:21:40 10 MS. DEAN: Before the witness is shown
 15:21:42 11 anything, I would just ask for a courtesy copy so I
 15:21:45 12 know what's going on.
 15:21:46 13 THE COURT: Is this just to refresh memory?
 15:21:48 14 MR. FITZPATRICK: We're going to start with
 15:21:51 15 that.
 15:21:51 16 THE COURT: Reference the page number. It's a
 15:21:53 17 trial transcript?
 15:21:54 18 MR. FITZPATRICK: Sure, it's a trial
 15:21:56 19 transcript, Page 59 from the Pelletier case, June
 15:22:01 20 24, 2009, Lines 19 through 27.
 15:22:07 21 MS. DEAN: And we weren't provided copies.
 15:22:10 22 MR. FITZPATRICK: Judge, I don't have --
 15:22:12 23 THE COURT: The objection is overruled.
 15:22:13 24 Go ahead.

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15:22:15 1 BY MR. FITZPATRICK:
 15:22:15 2 Q. Do you recall the various questions:
 15:22:18 3 "Q. You're familiar with the literature
 15:22:20 4 that's been published by prominent scientists
 15:22:23 5 talking about the potency being anywhere from
 15:22:25 6 300 to 500 times greater than chrysotile,
 15:22:29 7 fair?
 15:22:30 8 "A. 3 times to 500 times, sure. Depends
 15:22:34 9 on who you're reading.
 15:22:35 10 "Q. My understanding is --" Doctor,
 15:22:37 11 hello.
 15:22:38 12 "Q. My understanding is that last year
 15:22:40 13 you thought 300 was a pretty reasonable
 15:22:43 14 number.
 15:22:44 15 "A. Well, that's for amosite, sure."
 15:22:48 16 Do you recall saying that?
 15:22:49 17 A. Yeah, and I just said the same thing.
 15:22:50 18 That's fine.
 15:22:51 19 Q. So we can agree --
 15:22:52 20 A. I'm not arguing with you about the
 15:22:54 21 number.
 15:22:54 22 Q. So we can agree --
 15:22:55 23 A. Why are you reading that to me? I
 15:22:57 24 can -- you know, that's what I said.

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15:22:59 1 Q. Okay. So for amosite -- in other words,
 15:23:03 2 to put this in context, if we have an amosite fiber
 15:23:08 3 and a chrysotile fiber, to hit that little cell
 15:23:12 4 that you do, it would take 300 chrysotile fibers to
 15:23:17 5 do basically what one amosite fiber can do? That's
 15:23:21 6 what 300 times potency means, fair?
 15:23:23 7 A. Correct.
 15:23:24 8 Q. Okay. And so, therefore, if you said
 15:23:30 9 there were 301 fibers, if I just went -- you've got
 15:23:39 10 301 -- 300 over 301 would be like 99.99 percent
 15:23:45 11 which one may have hit that cell, but on top of
 15:23:48 12 that, we have potency of 300 times greater, so the
 15:23:51 13 chance of that chrysotile ever causing that disease
 15:23:55 14 is about like slim to none if I do the fiber
 15:23:59 15 potency and the amount of fibers, fair?
 15:24:02 16 A. If that's --
 15:24:04 17 MS. DEAN: Your Honor, I'm just going to
 15:24:05 18 object to vague and compound.
 15:24:08 19 THE COURT: Overruled.
 15:24:08 20 BY THE WITNESS:
 15:24:09 21 A. You know, if that's what the exposure
 15:24:11 22 actually is, sure.
 15:24:13 23 BY MR. FITZPATRICK:
 15:24:14 24 Q. Okay. Now -- and you mentioned to the

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15:24:19 1 jury -- okay. So we've talked about fiber potency.
 15:24:22 2 You mentioned Chris Wagner, did you not,
 15:24:26 3 on direct?
 15:24:26 4 A. That's correct.
 15:24:27 5 Q. The gentleman from South Africa who I
 15:24:31 6 wrote down he actually discovered the association
 15:24:34 7 of mesothelioma with crocidolite asbestos in 1960?
 15:24:40 8 A. Right.
 15:24:41 9 Q. And I think you've said repeatedly that
 15:24:44 10 even that wasn't conclusive because he didn't find
 15:24:47 11 any amosite exposures; that was limited to that
 15:24:50 12 blue asbestos, correct?
 15:24:51 13 A. I didn't say anything about amosite.
 15:24:53 14 I'm just saying the workers he was studying were
 15:24:56 15 exposed to crocidolite.
 15:24:57 16 Q. And, indeed, over the years, you had
 15:24:59 17 kept in contact with him and he published many
 15:25:03 18 articles on asbestos causing mesothelioma, correct?
 15:25:07 19 A. Right.
 15:25:07 20 Q. And, actually, over the years, as you've
 15:25:11 21 read, his opinion is the vast majority of
 15:25:14 22 mesotheliomas are indeed caused by crocidolite or
 15:25:17 23 amosite as opposed to chrysotile, fair?
 15:25:20 24 A. Well, not -- not really. I mean, he

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15:25:23 1 actually years later came to the opinion that it
 15:25:25 2 was only crocidolite. I mean, that -- I don't know
 15:25:29 3 where he got that, but he sort of went out on a
 15:25:32 4 limb on that one, I think.
 15:25:34 5 So he formed what he called, excuse me,
 15:25:36 6 the crocidolite hypothesis where he said that only
 15:25:39 7 crocidolite caused the disease, but, you know, I
 15:25:42 8 don't know where that comes from.
 15:25:50 9 Q. I'm sorry. The gentleman who you
 15:25:53 10 attribute with making the discovery of asbestos in
 15:25:57 11 mesothelioma, when you disagree with him, you say
 15:25:59 12 he went out on a limb?
 15:26:01 13 A. Well, now, that is not at all fair
 15:26:04 14 because Dr. Wagner made some very important
 15:26:07 15 contributions, and I think he was right on in a
 15:26:10 16 number of subjects.
 15:26:13 17 But he's the only scientist that I know
 15:26:16 18 who says that crocidolite is the only asbestos that
 15:26:19 19 causes mesothelioma. Now, if that's not out on a
 15:26:22 20 limb, you will have to explain what is.
 15:26:25 21 Q. When we talk about exposure levels, you
 15:26:28 22 have indicated before, obviously for asbestosis,
 15:26:31 23 you need significant and long exposures, fair?
 15:26:34 24 A. Right.

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15:26:28 1 Q. Obviously, for mesothelioma those
 15:26:30 2 exposures can be at much lower levels and yet still
 15:26:34 3 cause the disease, fair?
 15:26:35 4 A. Right.
 15:26:36 5 Q. I believe you have indicated before,
 15:26:39 6 have you not, that exposure -- let's see, the rats.
 15:26:42 7 The rats that you dosed was 1,000 to
 15:26:49 8 5,000 fibers per cc; is that correct?
 15:26:52 9 A. For a short time, correct.
 15:26:54 10 Q. And that was, again, 1,000 to 5,000
 15:26:57 11 fibers per cc is what is a concentration that you
 15:27:01 12 dosed the rats at?
 15:27:02 13 A. That's right.
 15:27:02 14 Q. That was a very dusty, dusty
 15:27:06 15 environment, fair?
 15:27:07 16 A. Right.
 15:27:07 17 Q. And what you were trying to do with this
 15:27:10 18 heavy dose was trying to induce disease?
 15:27:13 19 A. It's not a heavy dose. It's a heavy
 15:27:16 20 concentration. It's actually a small dose because
 15:27:18 21 it's for a short time, but yes. The answer to your
 15:27:21 22 question is, yes, we were starting the disease
 15:27:25 23 development.
 15:27:26 24 Q. All right. Now, you talked a little bit

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15:27:30 1 about thresholds. There is a threshold today and
 15:27:35 2 safe levels. Do you recall that?
 15:27:36 3 A. There is no safe level, is what I say.
 15:27:38 4 Q. I understand. All right. So you and I
 15:27:41 5 have done this before. We start with what you
 15:27:43 6 dosed.
 15:27:44 7 You are aware, certainly, that there
 15:27:46 8 were TLVs, threshold limit values, of asbestos in
 15:27:46 9 the '40s, '50s, and '60s of 5 million particles; is
 15:27:55 10 that correct?
 15:27:55 11 A. That is what I understand.
 15:27:56 12 Q. And if I make a conversion because you
 15:27:58 13 were dosing the rats at fibers per cc,
 15:28:02 14 approximately 1 million particles equals 6 fibers,
 15:28:02 15 so the TLV of 5 million particles is generally
 15:28:09 16 equivalent to 30 fibers per cc; is that correct?
 15:28:12 17 A. Right.
 15:28:13 18 Q. All right. There is an existing TLV
 15:28:15 19 today for asbestos for 0.1 fiber per CC; is that
 15:28:22 20 fair?
 15:28:22 21 A. Right.
 15:28:23 22 Q. And, therefore, again, to put it in
 15:28:25 23 context, the levels of the rats, certainly anywhere
 15:28:28 24 from 30 to 166 times higher than the TLV. And,

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15:28:34 1 indeed, if we looked at the existing TLV, we are
 15:28:38 2 talking about 10,000 to 50,000 times higher than
 15:28:43 3 the existing TLV today?
 15:28:45 4 A. Yeah. And the point? I mean, that is
 15:28:46 5 not a useful comparison certainly because TLVs are
 15:28:50 6 to protect people, while what I'm trying to do is
 15:28:53 7 induce a disease.
 15:28:55 8 Q. Did I ask about protecting? My question
 15:28:56 9 was, first of all, are those numbers accurate?
 15:29:00 10 A. As far as I can tell.
 15:29:01 11 Q. Okay. Now, you sacrificed -- when you
 15:29:18 12 say that you injected them with anesthesia, you
 15:29:20 13 killed the rats, right?
 15:29:22 14 A. Right.
 15:29:23 15 Q. And you sacrificed them hours, days, or
 15:29:27 16 weeks, do you not, over time?
 15:29:28 17 A. We have gone out to a year. Yes, that's
 15:29:31 18 right.
 15:29:31 19 Q. And gone out to a year.
 15:29:33 20 And is it true that in the amounts that
 15:29:34 21 you dosed the rats, that there -- you never found
 15:29:38 22 any evidence of cancer in your rats?
 15:29:41 23 A. Well, we have induced lung cancer, but
 15:29:44 24 not mesothelioma, and I told you that we did not do

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15:29:47 1 that. See, you don't have the hour time up there.
 15:29:50 2 That is why you can't say dose. When you said,
 15:29:53 3 Dose the animals, I'm trying to explain, that is
 15:29:56 4 not a dose. That is a concentration.
 15:29:58 5 Even at the 10,000 to 50,000 times
 15:30:01 6 higher, when you only expose them for an hour, you
 15:30:04 7 are producing a small dose, and we would not expect
 15:30:07 8 a mesothelioma to develop and we didn't get
 15:30:08 9 mesothelioma.
 15:30:08 10 Q. Even up to a year you did not get
 15:30:11 11 mesothelioma? Doctor, yes or no. Did you get a
 15:30:14 12 mesothelioma in your rats?
 15:30:17 13 A. No.
 15:30:18 14 Q. Thank you.
 15:30:19 15 A. At one hour a day for eight weeks, we
 15:30:22 16 did not. That was the year's regimen.
 15:30:25 17 Q. Doctor, is it also true then, if we
 15:30:28 18 convert this -- and your opinions that you have
 15:30:31 19 expressed many times in courts is that if a human
 15:30:34 20 was exposed to 1,000 to 5,000 fibers per cc over a
 15:30:39 21 course of one to three hours, if that were his
 15:30:42 22 dose, that in your opinion that would not be
 15:30:44 23 sufficient to cause mesothelioma in a human being,
 15:30:48 24 true?

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15:30:48 1 A. I think that's fair, yeah.

15:30:49 2 Q. And indeed you go beyond that. If

15:30:52 3 someone were exposed for three days at this level,

15:30:55 4 of 1,000 to 5,000 fibers per cc, in your opinion,

15:31:00 5 that would not be enough to develop a mesothelioma,

15:31:04 6 true?

15:31:05 7 A. I think that's right. Every time you

15:31:08 8 add a day, it makes it more difficult to say it

15:31:11 9 won't do it, but, you know, it's still a low dose.

15:31:13 10 Q. Okay. Now, obviously, you mentioned

15:31:19 11 genetics, so there is still truly individual

15:31:24 12 susceptibility for all of this; is that correct?

15:31:26 13 A. Certainly.

15:31:27 14 Q. And, again, my understanding is today we

15:31:32 15 have about 3,000 mesotheliomas currently diagnosed

15:31:35 16 per year; is that your understanding?

15:31:37 17 A. Yes.

15:31:37 18 Q. I mean, there may be some out or

15:31:41 19 whatever there are reporter, but generally those

15:31:42 20 are numbers of people of what they are finding out

15:31:45 21 for mesothelioma?

15:31:46 22 A. Correct.

15:31:46 23 Q. Now, to put that in context, 3,000

15:31:49 24 mesotheliomas compared to lung cancer. That is

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15:31:52 1 about 180,000 lung cancers a year?

15:31:55 2 A. That's right.

15:31:55 3 Q. About 200,000 breast cancers a year?

15:31:58 4 A. Yeah.

15:31:59 5 Q. So quite a rare form of cancer in this

15:32:02 6 country?

15:32:03 7 A. Always has been.

15:32:04 8 Q. Now, you would also agree, I believe,

15:32:15 9 that that number of mesotheliomas has been almost

15:32:19 10 constant over about the last 10 or 15 years? It

15:32:22 11 has been about 3,000, give or take something for

15:32:25 12 almost the last 10 or 15 years, fair?

15:32:28 13 A. That's my point, yeah.

15:32:29 14 Q. And the question for you is, in your

15:32:32 15 reviews, since you have studied asbestos, you are

15:32:36 16 aware, obviously, that in the '40s and '50s

15:32:39 17 dramatic uses of asbestos. Once OSHA came out, it

15:32:43 18 started tailing off. The goal was, obviously, we

15:32:43 19 would see a decrease with lesser use, more hygiene

15:32:50 20 industrial practices in place.

15:32:51 21 Yet despite lower users, we are still

15:32:55 22 seeing this same number of cancers; is that fair?

15:32:58 23 A. Right.

15:32:58 24 Q. And that is because of this genetic

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15:33:00 1 issue that I think you were talking about to this

15:33:02 2 jury?

15:33:03 3 A. I agree.

15:33:03 4 Q. And I think that is one of the things

15:33:14 5 that confounded scientists, that this number does

15:33:17 6 not get less, so you are actually trying to, I

15:33:20 7 think, identify the genes to see what can be done,

15:33:24 8 if anything?

15:33:24 9 A. Yeah, me and a number of other

15:33:25 10 investigators. Sure.

15:33:26 11 Q. All right. Now, a person breaths

15:33:40 12 about -- you and I have done this before. Breathes

15:33:44 13 about 10,000 liters of air a day, does he not?

15:33:49 14 A. Right.

15:33:49 15 Q. And there is about 1,000 ccs in a liter?

15:33:52 16 A. Correct.

15:33:53 17 Q. So that gives us about 10 million ccs of

15:33:56 18 air every day?

15:33:57 19 A. Yes.

15:33:58 20 Q. Now, lung tissue. In our own lung

15:34:01 21 tissue that you, I think, talked to the plaintiffs,

15:34:06 22 we may -- an average person may have as high as

15:34:09 23 1 million asbestos fibers per gram of wet lung,

15:34:15 24 fair?

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15:34:15 1 A. That is on the high side, but that can

15:34:18 2 happen, yes.

15:34:18 3 Q. And there is no risk of mesothelioma

15:34:19 4 from those fibers that we have in our lung, in your

15:34:23 5 opinion; is that correct?

15:34:23 6 A. Yeah, there is no evidence of risk, but

15:34:26 7 a couple things. First of all, it's not the

15:34:29 8 average person. I would say that is high.

15:34:31 9 And 1 million fibers is not a lot. I

15:34:34 10 mean, you can get a billion fibers into a thimble,

15:34:37 11 but your point is fine.

15:34:38 12 Q. Indeed, in the lungs we have millions of

15:34:41 13 grams of lung tissue, do we not?

15:34:43 14 A. Right.

15:34:44 15 Q. So, therefore, in our lung if this the

15:34:47 16 high average, we are going to take the high average

15:34:49 17 person, we are talking about billions of asbestos

15:34:52 18 fibers that they have in their lung for which they

15:34:54 19 are not at risk, fair?

15:34:56 20 A. I agree.

15:34:57 21 Q. Okay. So then by definition, whether

15:35:03 22 you get that from background, somehow those fibers

15:35:07 23 either did not get into the lymphatics, did not

15:35:10 24 migrate, somehow they did not cause a mesothelioma,

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15:35:14 1 fair?

15:35:15 2 A. True.

15:35:15 3 Q. We have asbestos mines in this country

15:35:18 4 out in California. There are California

15:35:21 5 outcroppings of rock that are chrysotile rock,

15:35:21 6 fair?

15:35:25 7 A. Yes.

15:35:25 8 Q. And do you know what the state rock of

15:35:26 9 California is?

15:35:27 10 A. Serpentine.

15:35:28 11 Q. But even though there is no way for you

15:35:39 12 to say that background can cause it, at the same

15:35:43 13 time you can't rule out a background exposure and

15:35:47 14 an occupational exposure as to which fiber actually

15:35:51 15 caused that cell to mutate, fair?

15:35:54 16 A. Well, if there is a mutation, whatever

15:36:00 17 fibers got into that person could have caused it,

15:36:03 18 sure. The issue is which ones are more likely to

15:36:06 19 cause it. The background is billions, and I'm

15:36:10 20 telling you that is not a whole lot of fibers.

15:36:12 21 If a person is exposed occupationally on

15:36:14 22 a regular basis, they are going to get more than

15:36:16 23 background.

15:36:17 24 Q. To put that in context, the current

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15:36:20 1 existing TLV set by OSHA today is 0.1 fibers per

15:36:25 2 cc, correct?

15:36:26 3 A. Correct.

15:36:26 4 Q. That is a level that is considered to be

15:36:29 5 safe in a workplace today, is it not?

15:36:32 6 A. Well, you know, you need to ask an

15:36:35 7 industrial hygienist, which you have established

15:36:38 8 I'm not, but that is a level that can be obtained

15:36:42 9 in a workplace. It does not necessarily mean it's

15:36:46 10 safe. It does not say that it's safe. It says

15:36:49 11 that it's designed to protect as many people as

15:36:52 12 possible.

15:36:52 13 Q. Okay. Now, it's designed to protect as

15:36:56 14 many people as possible --

15:36:57 15 A. Yeah.

15:36:57 16 Q. -- but yet it's not safe?

15:36:59 17 What it means is that all of medical

15:37:02 18 science has determined that you can breath 0.1

15:37:05 19 fiber per cc for an eight-hour day for a working

15:37:08 20 week, over a working lifetime, and that is

15:37:10 21 considered to be relatively safe?

15:37:13 22 A. Oh, now it's relatively safe.

15:37:15 23 Q. I'm asking -- I'll put your qualifier.

15:37:19 24 Is it relatively safe?

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15:37:20 1 A. I'm not an industrial hygienist. I

15:37:23 2 don't know what has been established as safe. I

15:37:25 3 have never heard of a safe level anywhere other

15:37:29 4 than background.

15:37:29 5 Q. I assume that you are not suggesting

15:37:31 6 that OSHA or NIOSH or any of our -- are

15:37:37 7 establishing levels that they think are dangerous?

15:37:40 8 They are not saying. You can go be exposed to 0.1,

15:37:43 9 which a medical scientist has said is acceptable,

15:37:45 10 but we don't think that is safe?

15:37:47 11 A. Look. You are talking OSHA with me now.

15:37:50 12 We have never done this before. OSHA, the

15:37:52 13 Occupational Safety and Health Administration, sets

15:37:56 14 levels that they can achieve in a workplace that

15:37:58 15 will protect as many people as possible. I have

15:38:01 16 never heard it as safe.

15:38:03 17 Q. If we are worried about. I think you

15:38:08 18 said exposures to carcinogens can cause damage to a

15:38:13 19 cell. That is what we worry about, correct?

15:38:15 20 A. Right.

15:38:16 21 Q. Do you know one cell can be damaged and

15:38:20 22 that is what caused this cascade of events; is that

15:38:25 23 correct?

15:38:25 24 A. Well, you have to have a series of

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15:38:27 1 genetic errors that accumulate over time. It's not

15:38:32 2 just one cell. It's the progeny of those cells.

15:38:36 3 Q. Do you fill up your car with gas?

15:38:39 4 A. Do I?

15:38:39 5 Q. Yes.

15:38:39 6 A. Of course.

15:38:40 7 Q. Is there something in gas that is known

15:38:43 8 to cause liver cancer, called benzene?

15:38:45 9 A. Benzene, sure.

15:38:46 10 Q. You smell benzene every time you fill up

15:38:49 11 your car?

15:38:49 12 A. Right.

15:38:50 13 Q. So you are getting some dose of benzene,

15:38:53 14 even though a carcinogenic case agent, as you say

15:38:57 15 there is no known safe level, we smell it every

15:39:01 16 time we fill up our car, fair?

15:39:04 17 A. Yeah, right. I don't know if there is a

15:39:07 18 safe level for benzene. If you ask me if the

15:39:09 19 levels that you smell when you fill up your car are

15:39:12 20 safe or not, I just don't know that.

15:39:13 21 Q. There is arsenic in various products,

15:39:16 22 and you would agree certainly arsenic in heavy

15:39:18 23 doses is not good?

15:39:18 24 A. Oh, I certainly agree. And I walk out

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15:39:20 1 in the sunshine and play tennis, and I get a lot of
 15:39:24 2 sun. That is clearly a carcinogen.
 15:39:26 3 Q. But there is a dose -- there are foods
 15:39:28 4 that actually have traces of arsenic which we can
 15:39:32 5 eat and causes no problems?
 15:39:33 6 A. Of course.
 15:39:33 7 Q. That is what we call the dose/response
 15:39:36 8 relationship, right?
 15:39:37 9 A. Absolutely.
 15:39:38 10 Q. Whether it's aspirin or whether I use
 15:39:41 11 arsenic, there are levels which are considered safe
 15:39:45 12 versus levels which would not be, fair?
 15:39:49 13 A. I agree. Sure.
 15:39:50 14 Q. Now, the target cell for cancer.
 15:40:01 15 Obviously, I believe it's your opinion that the
 15:40:04 16 fibers don't get down to that target cell. They
 15:40:09 17 are cleared, whether it's the mucociliary tree,
 15:40:12 18 obviously, those are not causing it, by definition?
 15:40:15 19 A. That's right.
 15:40:16 20 Q. Because about 90 percent of what we
 15:40:17 21 breath in either gets spilled out the mucociliary
 15:40:19 22 tree, so that does not cause it?
 15:40:22 23 A. I agree.
 15:40:22 24 Q. Okay. And the macrophages, once they

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15:40:38 1 get in, they macrophages engulf those fibers,
 15:40:38 2 certain fibers, and, again, those would not be
 15:40:38 3 causative, would they?
 15:40:43 4 A. No. Macrophages pick up fibers in a lot
 15:40:43 5 of different places, including out in the pleural
 15:40:43 6 cavity, after the fibers have already interacted,
 15:40:49 7 but, yeah, if a macrophage picks up a fiber in the
 15:40:53 8 alveolar space and gets it out on the escalator,
 15:40:56 9 sure, I agree.
 15:40:57 10 Q. And if the fibers get in the lungs but
 15:40:59 11 they don't migrate to the pleura, they may get
 15:41:03 12 eliminated. Obviously, those don't cause the
 15:41:05 13 cancer, fair?
 15:41:06 14 A. I agree.
 15:41:07 15 Q. And we have billions of macrophages that
 15:41:10 16 are trying to encompass or encase those fibers,
 15:41:13 17 fair?
 15:41:14 18 A. Absolutely.
 15:41:15 19 Q. Now, the fibers that remain in the lung,
 15:41:17 20 if they don't migrate to the pleura, if they don't
 15:41:21 21 get out to the pleura and get that, they don't
 15:41:25 22 cause the cancer, do they?
 15:41:26 23 A. I agree.
 15:41:27 24 Q. And the fibers that actually made it or

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15:41:31 1 migrated to the pleura, if they don't get to the
 15:41:34 2 target cell that started it, they didn't cause the
 15:41:38 3 cancer, fair?
 15:41:40 4 A. I agree.
 15:41:41 5 Q. And some fibers have a capacity, more so
 15:41:44 6 than others, to dissolve or what we call leach out;
 15:41:48 7 is that correct?
 15:41:48 8 A. Right.
 15:41:48 9 Q. The serpentine or chrysotile fibers have
 15:41:54 10 a tendency to leach out or dissolve in, what,
 15:41:57 11 three years, less than three years?
 15:41:58 12 A. Well, it depends. I mean, some never
 15:42:02 13 dissolve, while some can disappear very quickly.
 15:42:02 14 It depends on a their size and thickness.
 15:42:04 15 Q. And there are other fibers, such as
 15:42:07 16 amosite and crocidolite that have a tendency never
 15:42:11 17 dissolve? They stay longer. That is one of the
 15:42:13 18 reason they are more causative or have a greater
 15:42:16 19 fiber potency, fair?
 15:42:17 20 A. I agree.
 15:42:19 21 Q. Now, in addition to potency, you are
 15:42:24 22 familiar, having reviewed the literature, of what
 15:42:28 23 is called short fibers versus long fibers, correct,
 15:42:31 24 sir?

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15:42:31 1 A. Sure.
 15:42:32 2 Q. And there are some very prominent
 15:42:36 3 scientists, Vic Roggli, someone you know, who
 15:42:39 4 actually believes that unless fibers are greater
 15:42:42 5 than 5 microns, the short fibers are not causative,
 15:42:45 6 fair?
 15:42:45 7 A. There are some people that say that,
 15:42:46 8 yes.
 15:42:47 9 Q. Actually, Vic Roggli, who was a
 15:42:49 10 prominent pathology professor at Duke, a colleague
 15:42:53 11 and someone you know very well?
 15:42:55 12 A. Sure. I agree with Victor on
 15:42:58 13 99.9 percent of whatever he has to say, but I don't
 15:43:02 14 know how he gets. Well, if you have 5 microns you
 15:43:05 15 don't cause disease, but if you are 5.2 microns,
 15:43:10 16 you do. That biology does not make sense when you
 15:43:12 17 talk like that, so I disagree with Dr. Roggli on
 15:43:14 18 that.
 15:43:14 19 Q. So you disagree with Wagner -- you agree
 15:43:17 20 with him that 99 percent, except when he's out
 15:43:18 21 there in left field, and Vic Roggli, you agree with
 15:43:22 22 all the other stuff he writes, except when he has
 15:43:23 23 an opinion that you don't support in a courtroom?
 15:43:25 24 A. Well, that is completely unfair. I

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15:43:28 1 don't know why you say that. Look, Dr. Roggli and
 15:43:30 2 I have written together time after time. We are
 15:43:34 3 colleagues. Why can't I tell you and the jury that
 15:43:37 4 I don't agree with that point, and you tell me it's
 15:43:40 5 because of litigation?
 15:43:41 6 I find that -- actually, it makes me
 15:43:47 7 uncomfortable when you say something as silly as
 15:43:49 8 that.
 15:43:49 9 Q. Well, let's see. He's on the Canadian
 15:43:51 10 American Mesothelioma Panel, isn't he? This is not
 15:43:55 11 a tough question. Just answer this one. Is he on
 15:43:56 12 the panel?
 15:43:56 13 A. Of course. He's a fantastic guy. He's
 15:43:59 14 one of the smartest guys I know.
 15:44:02 15 Q. In fact, someone you have actually
 15:44:03 16 published as a coauthor with, have you not?
 15:44:05 17 A. I just said that to the jury.
 15:44:07 18 Q. But, again, his opinion is short fibers
 15:44:11 19 don't cause mesothelioma?
 15:44:12 20 A. And I told you why I disagree with that.
 15:44:15 21 Q. All right. Now, in your testimony that
 15:44:24 22 every exposure contributes -- and I have asked you
 15:44:27 23 this over the years -- is it true that you cannot
 15:44:31 24 cite one article in the world's medical literature

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15:44:35 1 that states that every exposure to asbestos
 15:44:39 2 contributes to a person's mesothelioma?
 15:44:43 3 A. True. That is true. Nor would I expect
 15:44:46 4 to be able to find that because that just would not
 15:44:49 5 be something that somebody would write. You know,
 15:44:51 6 it's like if somebody smokes cigarettes again or is
 15:44:56 7 exposed to asbestos over the decades. You say,
 15:44:58 8 Well, which one of those cigarettes did it? Which
 15:45:01 9 exposure did it? You can't do that. You can't
 15:45:04 10 sort it out.
 15:45:06 11 Therefore, the medical literature
 15:45:08 12 says -- the medical literature says that what you
 15:45:12 13 are exposed to causes the disease. It doesn't say,
 15:45:15 14 This did it, that did it, we can sort these things
 15:45:16 15 out. That is not what the medical literature says.
 15:45:19 16 Q. There is no oncology textbook, pulmonary
 15:45:21 17 pathology that says every exposure contributes to
 15:45:24 18 the disease, true?
 15:45:25 19 A. Not in those words, that's correct.
 15:45:27 20 Q. And the reason why is because no medical
 15:45:35 21 physician would come and say such a thing because
 15:45:38 22 they would not even publish such an opinion, fair?
 15:45:41 23 A. I can't tell you what someone would say,
 15:45:44 24 but the --

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15:45:44 1 Q. Then I'll rephrase it. Let me do it
 15:45:47 2 this way. You, however, come and tell the jury,
 15:45:51 3 since you can't tell what fiber got to the pleura,
 15:45:54 4 what fiber potency did, what length of fiber, what
 15:45:58 5 dissolved, you say they all do it because that is
 15:46:01 6 what we call the litigation lottery? And you get
 15:46:03 7 to blame everybody?
 15:46:05 8 MS. DEAN: Objection, argumentative, and
 15:46:09 9 objection, compound.
 15:46:09 10 THE COURT: Sustained.
 15:46:12 11 BY MR. FITZPATRICK:
 15:46:12 12 Q. Doctor, one last question.
 15:46:14 13 Do you know of any expert in the country
 15:46:16 14 that testifies 36 times or more a year and comes to
 15:46:21 15 a trial without having read anything about the case
 15:46:25 16 in question?
 15:46:27 17 A. I don't know if anybody else does that.
 15:46:30 18 You'll have to ask.
 15:46:31 19 Q. Thank you very much.
 15:46:32 20 A. You are welcome.
 15:46:33 21 THE COURT: Mr. King.
 15:46:33 22 CROSS-EXAMINATION
 15:46:36 23 BY MR. KING:
 15:46:36 24 Q. Thank you, your Honor. Good afternoon,

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15:46:57 1 Dr. Brody.
 15:46:58 2 A. Good afternoon.
 15:46:59 3 Q. My name is Jeff King. I have a few
 15:47:01 4 question. Hopefully, I won't overlap. I will try
 15:47:04 5 my best to avoid any question that has already been
 15:47:05 6 asked. I am going to have to pause once a while to
 15:47:07 7 read through some questions and hopefully skip
 15:47:09 8 right over them.
 15:47:11 9 You understand that there are experts
 15:47:14 10 who know about the dangers that are posed by
 15:47:17 11 asbestos in the workplace and are called industrial
 15:47:19 12 hygienists?
 15:47:19 13 A. Right.
 15:47:20 14 Q. And you are not an industrial hygienist,
 15:47:22 15 correct?
 15:47:22 16 A. I'm still not. That's right.
 15:47:23 17 Q. And never have been, right?
 15:47:25 18 A. Right.
 15:47:25 19 Q. You would agree that if I wanted to find
 15:47:28 20 out about the dangers posed by a particular
 15:47:29 21 asbestos containing product in a workplace, I
 15:47:31 22 should ask a certified industrial hygienist,
 15:47:34 23 correct?
 15:47:35 24 A. Please do.

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15:47:35 1 Q. You never done any research on
 15:47:38 2 particular asbestos-containing product types, have
 15:47:40 3 you?
 15:47:40 4 A. Correct.
 15:47:41 5 Q. Generally speaking, you have not studied
 15:47:43 6 and are not aware of the levels of fiber that are
 15:47:46 7 released during different asbestos-containing
 15:47:50 8 products being worked in different working
 15:47:53 9 conditions, correct?
 15:47:53 10 A. Correct.
 15:47:54 11 Q. Generally, as a general proposition, you
 15:47:56 12 would agree that assessing the nature of a specific
 15:48:00 13 asbestos exposure in the workplace is just not your
 15:48:02 14 area, right?
 15:48:03 15 A. It's still not. I agree.
 15:48:06 16 Q. You have not done any occupational
 15:48:09 17 studies on the human population involving asbestos
 15:48:11 18 exposure, correct?
 15:48:12 19 A. Well, not epidemiology. I mean, I have
 15:48:15 20 studied human tissues for decades, but not
 15:48:18 21 populations, right.
 15:48:18 22 Q. Right. But epidemiology implies
 15:48:20 23 population studies, correct?
 15:48:22 24 A. Yes.

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15:48:22 1 Q. And you have not done any population
 15:48:24 2 studies?
 15:48:25 3 A. Correct.
 15:48:25 4 Q. So your studies have been predominantly
 15:48:29 5 on the animal side, correct?
 15:48:30 6 A. Using animals to understand human
 15:48:32 7 disease, that's correct.
 15:48:34 8 Q. You have testified, as we have heard, in
 15:48:35 9 many, many cases. Do you know how many of those
 15:48:37 10 pertained to plaintiffs that were exposed in the
 15:48:40 11 Navy alone?
 15:48:41 12 A. No idea.
 15:48:43 13 Q. Would you be of the opinion, sitting
 15:48:45 14 here today, that if someone had mesothelioma and
 15:48:48 15 worked on a ship, Navy ship, from 1948 to 1952 in
 15:48:53 16 the machinery spaces, where there was amosite
 15:48:57 17 insulation and that person contracted mesothelioma,
 15:49:00 18 that it was those four years that cased the
 15:49:03 19 disease?
 15:49:03 20 A. If that is all they were exposed to,
 15:49:05 21 sure.
 15:49:08 22 Q. That would be enough exposure to cause
 15:49:10 23 the disease, correct?
 15:49:11 24 A. If that's what they were exposed to,

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15:49:13 1 that was their only exposure, they got mesothelioma
 15:49:16 2 in the appropriate latency period, certainly.
 15:49:19 3 Q. You've testified in the past that 85 to
 15:49:22 4 90 percent of the mesothelioma cases that occur are
 15:49:26 5 caused by asbestos, correct?
 15:49:27 6 A. Right.
 15:49:27 7 Q. That leaves 10 to 15 percent that are
 15:49:30 8 caused by something else that we just can't
 15:49:32 9 identify, correct?
 15:49:33 10 A. Well, that's a group called idiopathic.
 15:49:36 11 It means you don't know the cause. So within that
 15:49:39 12 group, there may be some asbestos -- in fact, there
 15:49:41 13 probably are some asbestos-induced mesotheliomas,
 15:49:44 14 but you weren't able to find the cause, you weren't
 15:49:46 15 able to find the source and so it remains
 15:49:50 16 idiopathic in that group, sure.
 15:49:51 17 Q. We just don't know the cause, correct?
 15:49:53 18 A. That's right.
 15:49:54 19 Q. Okay. You talked about fiber types.
 15:49:57 20 That's been discussed.
 15:49:58 21 You understand that chemically,
 15:50:01 22 physically, structurally and electrically,
 15:50:05 23 chrysotile asbestos fibers differ from the
 15:50:09 24 amphibole fibers, correct?

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15:50:13 1 A. Right.
 15:50:13 2 Q. Do you agree that some of those
 15:50:16 3 differences, sir, make the amphiboles the potent
 15:50:17 4 fiber in causing the disease?
 15:50:19 5 A. Yes.
 15:50:19 6 Q. For example, the iron is one of the
 15:50:21 7 molecular components of the amphibole that's not
 15:50:26 8 present in chrysotile, correct?
 15:50:27 9 A. Well, not present isn't quite correct
 15:50:29 10 because chrysotile can accumulate iron, and so it
 15:50:33 11 has many of the same properties after it
 15:50:35 12 accumulates the iron, but in its primal mineralogic
 15:50:41 13 structure, that's correct, it doesn't contain iron.
 15:50:44 14 Q. Does the chemical definition or chemical
 15:50:48 15 content of chrysotile contain iron?
 15:50:50 16 A. No.
 15:50:50 17 Q. And do you agree that the fact that
 15:50:54 18 crocidolite and amosite contains iron means that
 15:50:57 19 they will produce more oxygen radicals than
 15:51:01 20 chrysotile?
 15:51:01 21 A. Right. So we haven't talked about
 15:51:03 22 oxygen radicals and those are short-lived,
 15:51:07 23 high-energy compounds that can cause DNA damage,
 15:51:10 24 can cause the kind of genetic errors we've been

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15:51:13 1 talking about, and all the asbestos varieties can
 15:51:15 2 do that, but you're correct if you say the
 15:51:18 3 amphiboles produce more oxygen radicals, and that's
 15:51:21 4 probably another reason that they're more potent.
 15:51:25 5 Q. And the existence of oxygen radicals
 15:51:28 6 does play a role in the development of
 15:51:30 7 asbestos-related disease, correct?
 15:51:31 8 A. Cancer, yes, that's right.
 15:51:32 9 Q. Scientists use a concept known as
 15:51:37 10 half-life, right?
 15:51:37 11 A. Right.
 15:51:38 12 Q. Can you tell me what -- tell the jury,
 15:51:40 13 please, what half-life is?
 15:51:41 14 A. Half-life is the time that it takes for
 15:51:43 15 half of the material to disappear from the body.
 15:51:46 16 Q. And of the fiber types we've been
 15:51:50 17 talking about, they have different half-lives,
 15:51:52 18 correct?
 15:51:52 19 A. Yes.
 15:51:53 20 Q. And would you agree that the half-life
 15:51:55 21 of amosite and crocidolite is usually measured in
 15:51:59 22 years and even decades?
 15:52:00 23 A. Right.
 15:52:01 24 Q. Okay. And that the half-life of

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15:52:50 1 A. I agree.
 15:52:51 2 Q. On the other hand, would you agree,
 15:52:53 3 Doctor, that there is and are good and reputable
 15:52:57 4 scientists who believe that chrysotile doesn't
 15:52:58 5 cause mesothelioma at all?
 15:53:00 6 A. A few. There are a couple of people who
 15:53:03 7 will tell you that.
 15:53:04 8 Q. Thank you.
 15:53:05 9 Now, just a few questions on this "each
 15:53:09 10 and every exposure contributes to cause
 15:53:12 11 mesothelioma" opinion you have.
 15:53:15 12 You agree that you have no scientific --
 15:53:17 13 there is no scientific test that has led you to
 15:53:20 14 that conclusion, correct?
 15:53:21 15 A. It's an interesting question.
 15:53:26 16 Q. I can maybe shorten it.
 15:53:29 17 Do you recall saying that exact
 15:53:31 18 statement on July -- in 2006 in the Baxter trial?
 15:53:34 19 I can --
 15:53:35 20 A. I'm sure -- I probably said no. I mean,
 15:53:38 21 I've not done a test to do that.
 15:53:40 22 Q. Excuse me?
 15:53:41 23 A. I say I've not done a test to do that.
 15:53:44 24 Q. Okay.

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15:52:04 1 chrysotile is more typically measured in days,
 15:52:06 2 weeks or possibly months?
 15:52:08 3 A. Yes. But again, of course, you can
 15:52:10 4 still have some chrysotile fibers maintained for
 15:52:14 5 the life of the individual and they break down and
 15:52:16 6 tend to accumulate in the pleura, the target site,
 15:52:20 7 but --
 15:52:20 8 Q. My question was: Does amosite have a
 15:52:24 9 half-life measured in decades and chrysotile have a
 15:52:26 10 half-life measured in days, weeks or months? That
 15:52:28 11 was the question.
 15:52:29 12 A. I answered the question yes and then I
 15:52:32 13 explained.
 15:52:32 14 Q. Thank you.
 15:52:33 15 Amosite is much more durable,
 15:52:35 16 long-lasting and it lasts longer in the lungs,
 15:52:37 17 correct?
 15:52:37 18 A. Yes.
 15:52:37 19 Q. Now, there is no serious debate -- we've
 15:52:41 20 heard this. There's no serious debate in the
 15:52:44 21 medical and scientific community today that there
 15:52:47 22 is a potency difference between amosite and
 15:52:49 23 crocidolite on the one hand and chrysotile on the
 15:52:50 24 other, correct?

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15:53:44 1 A. As far as I know, there is no scientific
 15:53:47 2 test of that concept.
 15:53:49 3 Q. And you have not published a paper -- of
 15:53:53 4 the 149 papers you've published on all sorts of
 15:53:56 5 topics, you never published a paper on this topic,
 15:53:59 6 correct?
 15:53:59 7 A. No, nor have I -- nor has anyone tried
 15:54:01 8 to separate out the various exposures.
 15:54:04 9 I mean, whether it's -- as I said,
 15:54:07 10 whether it's asbestos over and over and over again
 15:54:09 11 or whether it's cigarette smoke over and over and
 15:54:11 12 over again, these are -- the concept is that what
 15:54:14 13 you're exposed to is what causes the disease.
 15:54:17 14 Q. Doctor, you would agree that there are
 15:54:21 15 some products that contain asbestos that are
 15:54:23 16 referred to as friable products?
 15:54:25 17 A. Right.
 15:54:25 18 Q. Can you give us a definition of
 15:54:27 19 "friable," please?
 15:54:28 20 A. It comes apart, basically.
 15:54:30 21 Q. Crumbles or turns to powder? Is that
 15:54:33 22 acceptable?
 15:54:33 23 A. That's fine.
 15:54:34 24 Q. Okay. Would you also agree that there

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15:54:37 1 are other products that are referred to as
 15:54:40 2 encapsulated products?
 15:54:41 3 A. Yes.
 15:54:41 4 Q. And that those are products that --
 15:54:44 5 where the fiber would be bound and mixed in with
 15:54:47 6 other materials?
 15:54:48 7 A. That's what I understand.
 15:54:49 8 Q. Okay. And would you agree that when an
 15:54:52 9 encapsulated product releases asbestos fibers, some
 15:54:54 10 of those fibers may have glue or other binding
 15:54:57 11 materials bound to the individual fibers?
 15:55:00 12 A. Well, I suppose they do, but it's not
 15:55:02 13 knowledge that I have.
 15:55:03 14 Q. Well, do you recall testifying to that
 15:55:05 15 in 2006 --
 15:55:06 16 A. So I --
 15:55:07 17 Q. -- in the Baxter trial?
 15:55:09 18 A. I said yes in 2006? I don't know.
 15:55:11 19 Q. You did. We can pull the transcript.
 15:55:14 20 A. No, I'm sure it's immaterial to this
 15:55:17 21 whole issue.
 15:55:17 22 I don't know anything about these
 15:55:18 23 products. If you're telling me that some of them
 15:55:21 24 contained glue and other junk on them, then fine,

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15:55:23 1 they don't. I don't know anything about this.
 15:55:25 2 Q. And the question is: Would you agree
 15:55:26 3 that some of those fibers if they are released from
 15:55:28 4 the encapsulated product would have some glue and
 15:55:31 5 the binding material stuck on the fiber?
 15:55:33 6 A. Well, maybe it would. I just don't
 15:55:34 7 know.
 15:55:34 8 Q. Okay. And would you agree that that
 15:55:36 9 glue or other material would cause that fiber to
 15:55:38 10 tumble and react differently?
 15:55:39 11 A. Probably.
 15:55:42 12 Q. And would you agree that asbestos is not
 15:55:44 13 dangerous unless it becomes airborne and inhaled?
 15:55:47 14 A. That is true.
 15:55:48 15 Q. And you have no reason to disagree with
 15:55:52 16 the proposition that friable products include the
 15:55:56 17 asbestos-containing insulation products on Navy
 15:55:59 18 ships and industrial facilities, do you?
 15:56:01 19 A. Well, I don't know that. If you're
 15:56:03 20 telling me they come apart and want me to assume
 15:56:06 21 that, I can, but I don't know that of my own --
 15:56:08 22 Q. That's fine.
 15:56:09 23 And would you agree that in place --
 15:56:10 24 asbestos that is in place and undisturbed is not

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15:56:14 1 dangerous?
 15:56:14 2 A. I agree.
 15:56:15 3 Q. We talked about clearance, and just to
 15:56:19 4 put a couple questions on that topic, you would
 15:56:21 5 agree that a majority of the asbestos fibers that
 15:56:24 6 are inhaled are cleared and eliminated from the
 15:56:27 7 lungs, correct?
 15:56:28 8 A. Yes.
 15:56:28 9 Q. In fact, you've testified in the past
 15:56:30 10 that approximately 95 percent of all fibers that
 15:56:34 11 are inhaled are eliminated, is that correct?
 15:56:36 12 A. Yes.
 15:56:36 13 Q. And that's as a result of the defense
 15:56:40 14 mechanisms you eloquently told us about, correct?
 15:56:44 15 A. Yes.
 15:56:45 16 Q. Then does it go to follow, sir, that the
 15:56:49 17 smaller the exposure, the more likely it is that
 15:56:52 18 the body's defense mechanisms will remove the
 15:56:56 19 fibers?
 15:56:56 20 A. Yes.
 15:56:56 21 Q. And it follows, then, that the lower the
 15:56:59 22 exposure, the less likely you are to get
 15:57:01 23 mesothelioma, correct?
 15:57:02 24 A. Correct.

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15:57:03 1 Q. Another way to say that is the fewer
 15:57:05 2 number of fibers that are inhaled, the lower the
 15:57:08 3 risk of contracting the disease, correct?
 15:57:09 4 A. True. This is the dose/response
 15:57:11 5 concept.
 15:57:12 6 Q. In order to conclude that chrysotile
 15:57:16 7 causes mesothelioma, a scientist would need a --
 15:57:20 8 mesothelioma in humans, a scientist would need
 15:57:23 9 epidemiological evidence, correct?
 15:57:24 10 A. Yes.
 15:57:25 11 Q. Now, you've done animal studies.
 15:57:31 12 Do you agree that if there's a conflict
 15:57:33 13 between animal studies and epidemiologic studies --
 15:57:37 14 talking about humans now -- the epidemiologic
 15:57:40 15 studies would trump the animal studies?
 15:57:43 16 A. Yes.
 15:57:43 17 Q. Sticking with the animal studies for a
 15:57:48 18 moment, you understand that there have been studies
 15:57:50 19 that show that amosite causes mesothelioma in
 15:57:54 20 baboons, monkeys and hamsters while chrysotile does
 15:57:58 21 not?
 15:57:58 22 A. I've seen those studies, yes.
 15:58:00 23 Q. And would you agree that a rat is not a
 15:58:03 24 good model for predicting whether humans will get

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15:58:07 1 mesothelioma from exposure to chrysotile?

15:58:09 2 A. Well, none of the animal models will do

15:58:13 3 a very good job of predicting disease. That's

15:58:15 4 really not what they should be used for. They're

15:58:18 5 used for demonstrating mechanisms of disease and

15:58:23 6 introducing what's called biological plausibility.

15:58:27 7 So if you did an epidemiological study

15:58:30 8 and the animal studies give you the same disease,

15:58:34 9 then it shows you how it happens and it will be

15:58:39 10 biologically plausible that the study is correct.

15:58:40 11 Q. So it's not a good predictor?

15:58:42 12 A. I don't think any of the animal studies

15:58:44 13 are good predictors.

15:58:44 14 Q. And, similarly, in vitro studies are not

15:58:47 15 good predictors?

15:58:48 16 A. No. Again, they're mechanistic studies

15:58:50 17 that allow you to go on and ask the more important

15:58:53 18 question -- or the other important questions in

15:58:54 19 populations.

15:58:55 20 Q. You're aware that the various

15:58:59 21 non-asbestos fibers have been shown to cause

15:59:01 22 mesothelioma in in vitro studies?

15:59:04 23 A. True.

15:59:05 24 Q. Such as ceramic fibers in hamsters?

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15:59:08 1 A. Well, ceramic fibers have been used

15:59:11 2 in vivo in hamster inhalation studies to cause

15:59:14 3 mesothelioma.

15:59:15 4 Is that what you're asking me?

15:59:16 5 Q. Yes.

15:59:17 6 A. Yes.

15:59:17 7 Q. Speaking now in a general perspective,

15:59:23 8 there are numerous substances that have been shown

15:59:25 9 to cause cancer in laboratory animals but have not

15:59:28 10 yet been shown to cause cancer in humans, correct?

15:59:30 11 A. Right.

15:59:31 12 Q. And you need that epidemiological study

15:59:34 13 to make the connection, right?

15:59:35 14 A. I agree.

15:59:35 15 Q. You've never worked or studied gaskets

15:59:39 16 in your line of work, correct?

15:59:40 17 A. I have not.

15:59:40 18 Q. And the animal studies that you've done

15:59:43 19 are not ones where you've exposed animals to an

15:59:46 20 environment that would replicate a human working on

15:59:49 21 gaskets or packing, is that correct?

15:59:51 22 A. Well, I don't know what the environment

15:59:53 23 is in gaskets and packing, but I've certainly never

15:59:55 24 tried to replicate any kind of workplace. I mean,

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15:59:58 1 the workplace that I've replicated is one of

16:00:02 2 decades ago when people were working at high

16:00:04 3 concentrations and as insulators and things like

16:00:08 4 that.

16:00:08 5 Q. Right. The focus for you is to study

16:00:11 6 mechanisms?

16:00:12 7 A. Right.

16:00:12 8 Q. I know that's a generalization, but

16:00:14 9 you're focusing on the mechanism of disease,

16:00:16 10 correct?

16:00:16 11 A. Right.

16:00:16 12 Q. You want to get them to have the

16:00:19 13 disease, so you put high levels in there for

16:00:21 14 concentrated periods of time and try to induce that

16:00:24 15 disease quickly, correct?

16:00:25 16 A. Correct.

16:00:25 17 Q. Okay. You are familiar with Dr. Irving

16:00:41 18 Selikoff, correct?

16:00:42 19 A. Sure.

16:00:42 20 Q. Would you agree he's one of the leading

16:00:44 21 authorities on asbestos and its dangers?

16:00:46 22 A. Certainly.

16:00:47 23 Q. Would you agree that his book in 1978 is

16:00:50 24 a learned treatise on the topic?

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16:00:54 1 A. Yes.

16:00:54 2 Q. Have you read that book?

16:00:55 3 A. Not cover to cover, but I have it and

16:00:58 4 I've read parts of it, sure.

16:00:59 5 Q. Are you aware that in 1978, Dr. Selikoff

16:01:02 6 concluded that there was no evidence that gaskets

16:01:05 7 and packing are harmful and, therefore, they should

16:01:08 8 be deemed safe in the workplace?

16:01:09 9 MS. DEAN: Objection, vague and

16:01:10 10 misrepresentation. It was only in fabrication.

16:01:13 11 THE COURT: Overruled.

16:01:14 12 BY THE WITNESS:

16:01:15 13 A. I know that there is a table that says

16:01:17 14 that. I don't know the sources or how true it is

16:01:24 15 or isn't. I know that it says that in there.

16:01:32 16 BY MR. KING:

16:01:34 17 Q. Just a few more questions, Doctor.

16:01:54 18 Your experiments have always involved

16:01:56 19 what you called a fine aerosol with asbestos being

16:02:00 20 blown into a chamber for the animals to inhale,

16:02:03 21 right?

16:02:03 22 A. Correct.

16:02:03 23 Q. And that means that the particles are

16:02:05 24 fine and powdery-like fiber insulation?

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16:02:08 1 A. Correct.

16:02:09 2 Q. And you've never used your equipment to

16:02:11 3 grind up a gasket or grind up packing and see what

16:02:15 4 happens to the rats' lungs when they're exposed to

16:02:17 5 ground-up packing or gaskets, correct?

16:02:20 6 A. I have not. Maybe others have, but I

16:02:21 7 have not.

16:02:21 8 Q. Well, the photos you showed earlier,

16:02:25 9 you're not suggesting any of those photos are

16:02:28 10 showing what a lung looks like after someone has

16:02:29 11 worked on or near gaskets or packing?

16:02:32 12 A. Well, I don't know what the asbestos

16:02:33 13 looks like from gaskets and packing. If it looks

16:02:37 14 like asbestos, then sure, that's what it would look

16:02:39 15 like. You know, if it looks like something other

16:02:42 16 than asbestos, then -- then it wouldn't look like

16:02:44 17 that.

16:02:45 18 Q. But you don't study workplace exposure

16:02:48 19 issues, so you don't know what that workplace looks

16:02:50 20 like?

16:02:50 21 A. That is correct.

16:02:53 22 MR. KING: Thank you, Doctor.

16:02:54 23 THE WITNESS: Thank you.

16:02:55 24 MR. KING: That's all. Thank you, your Honor.

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16:02:56 1 THE COURT: Redirect?

16:02:59 2 REDIRECT EXAMINATION

16:02:59 3 BY MS. DEAN:

16:03:00 4 Q. Professor Brody, you were asked a lot

16:03:05 5 about the difference in potency between amosite and

16:03:08 6 chrysotile.

16:03:09 7 Do you remember that?

16:03:09 8 A. Yes.

16:03:09 9 Q. I just want to ask you one follow-up

16:03:11 10 question.

16:03:12 11 If a company sold hundreds and hundreds

16:03:14 12 of pounds of insulation that was amosite

16:03:17 13 containing, is it your belief that that would be

16:03:19 14 more dangerous and create more of a risk for

16:03:23 15 mesothelioma than selling the exact same insulation

16:03:27 16 product with chrysotile?

16:03:29 17 MR. FITZPATRICK: Objection, your Honor,

16:03:30 18 outside the scope and foundation.

16:03:33 19 MS. DEAN: They raised this issue both with

16:03:35 20 Crane and GE.

16:03:37 21 THE COURT: Overruled.

16:03:37 22 BY THE WITNESS:

16:03:38 23 A. Well, I can't say that one is more

16:03:42 24 dangerous than another. In other words, they both

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16:03:46 1 produce -- they both are producing fibers that can

16:03:49 2 cause mesothelioma.

16:03:51 3 Now, it depends on how much the person

16:03:53 4 is exposed to and -- but as a general principle,

16:03:58 5 they both can cause mesothelioma.

16:04:01 6 BY MS. DEAN:

16:04:02 7 Q. You were asked about Dr. Wagner that you

16:04:06 8 used to work with and indicated that he went on a

16:04:08 9 limb with the crocidolite theory.

16:04:12 10 Do you remember that?

16:04:12 11 A. Despite the fact that I'm in the

16:04:14 12 courtroom, yes, that is what he did. He went out

16:04:16 13 on a limb.

16:04:17 14 Q. I want to follow up on that and ask you

16:04:19 15 about other sources that you've looked at to

16:04:23 16 determine whether other types of asbestos, the

16:04:26 17 chrysotile and the amosite, can cause mesothelioma.

16:04:29 18 Have you looked at these different

16:04:31 19 organizations to determine what their opinions are

16:04:34 20 about the ability of all types of asbestos, not

16:04:38 21 just crocidolite, to cause mesothelioma? And here

16:04:42 22 we have the National Institute For Occupational

16:04:44 23 Safety and Health, International Agency For

16:04:46 24 Research of Cancer, the U.S. Consumer Product

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16:04:49 1 Safety Commission, the National Toxicology Program,

16:04:52 2 the United States Department of Health and Human

16:04:55 3 Services, OSHA, the American Cancer Society, the

16:04:58 4 World Trade Organization, the EPA and there are

16:05:02 5 others.

16:05:02 6 Have you looked into that?

16:05:04 7 A. Right. I can tell you the opinions

16:05:06 8 of -- and where they come from for each one of

16:05:09 9 those except for the Consumer Product Safety

16:05:12 10 Commission. I don't know where they get their

16:05:13 11 information.

16:05:14 12 Q. Okay. So we'll isolate them.

16:05:16 13 And what is that opinion? What are

16:05:19 14 those opinions?

16:05:19 15 A. Well, every one of those agencies has

16:05:21 16 published the opinion that all of the asbestos

16:05:23 17 varieties, including chrysotile, cause

16:05:25 18 mesothelioma.

16:05:27 19 Q. Do you recall being asked questions

16:05:29 20 about whether there was a safe level of exposure to

16:05:32 21 benzene, arsenics and other substances?

16:05:35 22 A. Right.

16:05:36 23 Q. Okay. I want to ask you just about

16:05:38 24 asbestos.

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16:05:40 1 Have you looked at these different
 16:05:41 2 organizations' opinions on whether there is a known
 16:05:46 3 safe level of exposure to asbestos when we're
 16:05:49 4 talking about a propensity to cause the disease
 16:05:51 5 mesothelioma that Mr. Mulcahy died of?
 16:05:53 6 A. So I don't know what each of the
 16:06:00 7 opinions are specifically, but I've not seen a safe
 16:06:05 8 level established by any of these agencies.
 16:06:09 9 Q. Okay. The last question I want to ask
 16:06:12 10 you is about the dose/response.
 16:06:13 11 Do you remember when the last lawyer was
 16:06:17 12 asking you about have you had more exposure that
 16:06:20 13 increases your risk, if you have less exposure, you
 16:06:23 14 have a smaller risk? Do you remember that?
 16:06:24 15 A. Sure.
 16:06:25 16 Q. How does that play into latency?
 16:06:27 17 A. Yeah, so typically the more you're
 16:06:31 18 exposed to, the sooner you get the disease. I
 16:06:36 19 mean, it's just sort of what you expect, you know?
 16:06:39 20 The higher the dose, the more likely the disease is
 16:06:42 21 to develop early in one's life-span, and the lower
 16:06:46 22 the dose, the longer it takes, and that may or may
 16:06:49 23 not work out every time, but as a general
 16:06:51 24 principle, that's what you can expect.

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16:06:53 1 MS. DEAN: That's all the follow-up questions
 16:06:55 2 I had. Thank you.
 16:06:56 3 THE WITNESS: You're welcome.
 16:06:57 4 THE COURT: Anything further, Mr. Fitzpatrick?
 16:06:59 5 MR. FITZPATRICK: Yes, your Honor.
 16:07:03 6 And you can leave that up.
 16:07:06 7 RECROSS-EXAMINATION
 16:07:06 8 BY MR. FITZPATRICK:
 16:07:07 9 Q. When she said do all of these say there
 16:07:14 10 is no safe level, these are all opinions based on
 16:07:16 11 medical and scientific information as of 2009,
 16:07:20 12 correct?
 16:07:20 13 A. Right.
 16:07:20 14 Q. These are not opinions based on medical
 16:07:23 15 and scientific information in the '40s or '50s,
 16:07:27 16 fair?
 16:07:27 17 A. I agree.
 16:07:29 18 Q. And, indeed, there were considered safe
 16:07:31 19 levels in the '70s? We've talked about, have we
 16:07:35 20 not?
 16:07:35 21 A. Right. Safe versus, you know, as we
 16:07:36 22 talked about before, what was allowed in the
 16:07:37 23 workplace, I don't know.
 16:07:38 24 Q. Okay. I'm not asking for guarantees,

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16:07:40 1 but medical and science had established threshold
 16:07:44 2 limits for many products, one of which was
 16:07:46 3 asbestos, and for the '40s, '50s, '60s, it was 5
 16:07:50 4 million?
 16:07:51 5 A. Correct.
 16:07:51 6 Q. All right. So when she says there's no
 16:07:55 7 limit today, these are what we know as of 2009?
 16:07:58 8 A. I agree.
 16:07:59 9 Q. I mean, we learn a lot in medicine
 16:08:03 10 through the years, do we not?
 16:08:04 11 A. That's right.
 16:08:05 12 MR. FITZPATRICK: That's all.
 16:08:06 13 THE COURT: Anything further?
 16:08:08 14 MR. KING: Nothing further.
 16:08:08 15 THE COURT: Okay. You can step down. Thank
 16:08:10 16 you. Have a nice trip back. Watch your step.
 16:08:13 17 (Witness excused.)
 16:08:34 18 THE COURT: You don't have any additional
 16:08:35 19 witnesses today, correct?
 16:08:36 20 MS. DEAN: No, your Honor.
 16:08:37 21 THE COURT: All right. Very good.
 16:08:38 22 Ladies and gentlemen, that concludes the
 16:08:39 23 testimony for today. We'll see you here the same
 16:08:41 24 time tomorrow. Please remember not to discuss the

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16:08:44 1 case at all or do any independent research.
 16:08:47 2 THE DEPUTY: All rise for the jury, please.
 16:08:49 3 THE COURT: Have a nice night, everybody.
 4 (WHEREUPON, the trial was
 5 adjourned at 4:09 p.m. until
 6 9:15 a.m., Thursday, August 27,
 7 2009.)
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1 STATE OF ILLINOIS)
2) SS:
3 COUNTY OF DuPAGE)
4 I, VICTORIA C. CHRISTIANSEN, and KRISTIN
5 C. BRAJKOVICH, Certified Shorthand Reporters of the
6 State of Illinois, do hereby certify that we
7 reported in shorthand the proceedings had at the
8 hearing aforesaid, and that the foregoing is a
9 true, complete and correct transcript of the
10 proceedings of said hearing as appears from our
11 stenographic notes so taken and transcribed under
12 our personal direction.

13 IN WITNESS WHEREOF, we do hereunto set
14 our hand at Chicago, Illinois, this 26th day of
15 August, 2009.

16
17 KRISTIN C. BRAJKOVICH,
18 C.S.R. Certificate No. 84-3810;

19
20 VICTORIA C. CHRISTIANSEN,
21 C.S.R. Certificate No. 84-3192.
22
23
24

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